USSR UDC: 621.372.85

NEKRASOV, M. M., BERNSHTEYN, E. A., POPLAVKO, Yu. M., RUDYACHENKO, N. K., YAZYTSKIY, B. Ya.

"Investigation of the Effect of Temperature Self-Stabilization in the SHF Band"

Elektron. tekhnika. Nauchno-tekhn. sb. Radiodetali (Electronic Technology. Scientific and Technical Collection. Radio Components), 1970, vyp. 1(18), pp 47-50 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11B152)

Translation: The authors discuss the effect of temperature self-stabilization which is observed in some ferroelectric crystals. Strong dielectric dispersion which occasions considerable losses in the ferroelectric phase results in the establishment of the SHF temperature self-stabilization mode. These losses lead to intensive heat release and heating of the ferroelectric by a SHF field past the Curie point. The results of an experimental study of ferroelectrics in strong SHF fields are given. Experimental relationships are given for the coefficient of losses in ferroelectrics as a function of temperature, as well as relationships for the dielectric constant and through power as functions of the suppressed power in the SHF range for a polycrystal specimen of barium titanate with impurities. The experiment was carried out on a frequency of 10 GHz. Four illustrations, bibliography of nine titles.
V. S.
1/1

1/2 031 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--DIELECTRIC ANISOTROPY OF POLARIZED FERROELECTRIC CERAMICS AT ULTRAHIGH FREQUENCY -U-

AUTHOR-(03)-KARGOPOLOVA, N.P., POPLAVKO, YU.M., ISUPROV, V.A.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(2) 624-7

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ANISOTROPY, DIELECTRIC PROPERTY, PIEZOELECTRIC CERAMIC, BARIUM TITANATE, ZIRCONATE, ULTRAHIGH FREQUENCY, MICROWAVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0138 STEP NO--UR/0181/70/012/002/0624/0627

CIRC ACCESSION NO--AP0054934

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--18SEP70

2/2 031
CIRC ACCESSION NO--AP0054934
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PEROVSKITE CERAMICS WERE INVESTIGATED OF THE COMPN. BATIO SUB3, BASN SUB0.05 TI SUB0.95 O SUB3, DIFFERENT MODIFICATIONS OF THE CERAMICS TSTC (RHOMBO HEDRAL TETRAGONAL BA TITANATE ZIRCONATE), AND THE CERAMIC PB SUB0.6 BA SUB0.4 NB SUB2 O SUB6 WITH THE STRUCTURE OF TETRAGONAL K-W BRONZE. MEASUREMENTS OF THE DIELEC. CONST. EPSILON WERE CARRIED OUT AT 1 KHZ AND 27 GHZ IN WEAK FIELDS. MICROWAVE MEASUREMENT WERE CARRIED OUT BY THE WAVE RESONANCE METHOD.

UNCLASSIFIED

USSR UDC 621.315.592

POPLAVNOY, A. S., Siberian Physicotechnical Institute imeni V. D. Kuznetsov at Tomsk State University

"Kinetic Phenomena in Semiconductor Compounds of the $A^{I}B^{III}C_2^{VI}$ Type With a Chalcopyrite Lattice"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, No. 7, 1972, pp 46-51

Abstract: A four-ellipsoid model of the vertices of the valence zone proposed previously for certain semiconductor compounds of the $A^{I}B^{III}C_2^{VI}$ type is discussed. Such compounds are analogs of binary semiconductors $A^{II}B^{VI}$ and have many interesting features that have attracted attention. Until this time there has not been an explanation of the absence in these compounds of a correlation between the average atomic number and the width of the forbidden zone E_g that is common for $A^{III}B^{V}$ binary semiconductors and $A^{II}B^{IV}C_2^{V}$ trinary compounds. Berger and Petrov have noted that this can be caused by the complex structure of the zone boundaries of these compounds, but their measurements of the basic

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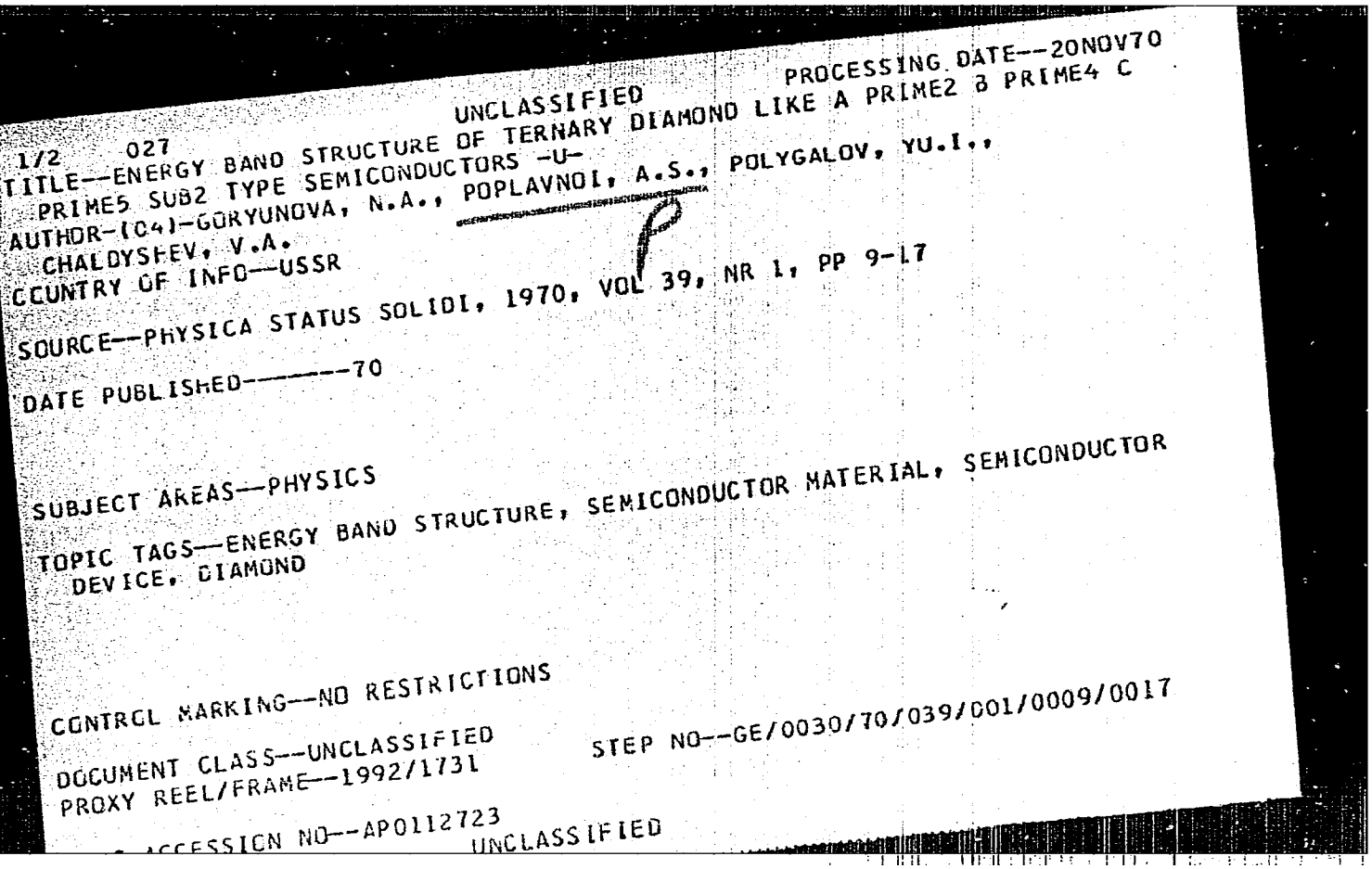
POPLAVNOY, A. S., Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, No. 7, 1972, pp 46-51

absorption boundary presented a fairly complex picture which could not describe the exponential or power dependence on $(\hbar\omega - E_g)$. The anisotropy of galvanomagnetic and thermomagnetic effects is investigated under the assumption of an anisotropic relaxation time and the presence of a single scattering mechanism. The kinetic coefficients are calculated for the case in which the four-ellipsoid zone diagram is characteristic of the chalcopyrite structure. Expressions are given for the conductivity tensor and the anisotropy of kinetic effects in longitudinal and transverse magnetic fields.



1/2 027 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--ENERGY BAND STRUCTURE OF TERNARY DIAMOND LIKE A PRIME2 B PRIME4 C PRIME5 SUB2 TYPE SEMICONDUCTORS -U-
AUTHOR-(04)-GORYUNOVA, N.A., POPLAVNOI, A.S., POLYGALOV, YU.I., CHALDYSHEV, V.A.
COUNTRY OF INFO--USSR
SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 39, NR 1, PP 9-17
DATE PUBLISHED--------70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ENERGY BAND STRUCTURE, SEMICONDUCTOR MATERIAL, SEMICONDUCTOR DEVICE, DIAMOND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED STEP NO--GE/0030/70/039/001/0009/0017
PROXY REEL/FRAME--1992/1731
ACCESSION NO--AP0112723 UNCLASSIFIED

2/2 027

CIRC ACCESSION NO--AP0112723

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN SUMMARY, THE CALCULATIONS OF THE BAND STRUCTURE PARAMETERS AND THE COMPARISON WITH THE EXPERIMENTAL DATA HAVE SHOWN THAT IN THE COMPOUNDS OF THE A PRIME2 B PRIME4 C PRIME5 SUB2 TYPE A COMPLICATED CONDUCTION BAND STRUCTURE EXISTS (FOR EXAMPLE, IN ZNGEP SUB2, ZNSIAS SUB2, CDSIP SUB2). IN PAPER (37) THE INFLUENCE OF THIS STRUCTURE ON THE PHYSICAL PROPERTIES HAS BEEN ALREADY DISCUSSED. THE CALCULATIONS HAVE SHOWN THAT IN ALL COMPOUNDS THE TOP OF THE VALENCE BAND CORRESPONDS TO THE T SUB4 REPRESENTATION (LIGHT HOLES). HOWEVER, IN THE CASES WHEN DELTA SUBER IS SMALL THIS RESULT CANNOT BE CONSIDERED AS UNAMBIGUOUS, AND T SUB5 (HEAVY HOLES) CAN LIE HIGHER THAN T SUB4, WHICH IS JUST OBSERVED IN A NUMBER OF EXPERIMENTS. THE COMPLICATED BAND STRUCTURE AND A VARIETY OF ITS PARAMETERS PERMIT TO THINK THAT THE TERNARY A PRIME2 B PRIME4 C PRIME5 SUB2 COMPOUNDS WILL PROVE TO BE SUITABLE MATERIALS FOR CREATING NEW SEMICONDUCTOR DEVICES WITH A WIDE RANGE OF PROPERTIES. IT IS HOPED THAT THE RESULTS GIVEN IN THIS WORK WILL AID IN A BETTER UNDERSTANDING OF EXPERIMENTS AND WILL HELP TO APPRECIATE CLEARLY POSSIBLE DIRECTIONS OF FURTHER INVESTIGATIONS.

FACILITY: A. F. IOFFE PHYSICO-TECHNICAL INSTITUTE, ACADEMY OF SCIENCES OF THE USSR, LENINGRAD. FACILITY: V. D. KUZNETSOV SIBERIAN PHYSICO-TECHNICAL INSTITUTE, TOMSK.

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202510018-0"

UDC 539.1.01

USSR

POPLAVNOY, A. S., POLYGALOV, Yu. I., and CHALDYSHEV, V. S., Siberian Physicotechnical Institute imeni V. D. Kuznetsov attached to Tomsk State University

"Energy Band Structure of Semiconductors With Chalcopyrite Lattice. III. $ZnSnP_2$, $CdSnP_2$, $ZnGeAs_2$, $CdGeAs_2$, $ZnSnAs_2$, $CdGeP_2$, $CdSiAs_2$"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 7, 1970, pp 17-22

Abstract: Previous articles by the authors developed a pseudopotential method for calculating the band structure of semiconductors with a chalcopyrite lattice and gave calculations for some compounds of the type $A^{II}B^{IV}C_2^V$. The present article calculates the band structure of a new group of compounds of the type $A^{II}B^{IV}C_2^V$; viz., $ZnSnP_2$, $ZnGeAs_2$, $ZnSnAs_2$, $CdSnP_2$, $CdGeAs_2$, $CdGeP_2$, $CdSiAs_2$. The calculations are performed at the most important symmetric Brillouin zone points Γ, T,

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POPLAVNOY, A. S., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 7, 1970, pp 17-22

N, P. The top of the valence band and the bottom of the conduction band are found to correspond to the point Γ. The dispersion law in the neighborhood of Γ is approximately given by Kane's formulas.

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UDC 612.823.5

USSR

BRYTVAN, Ya. M., VIYEVS'KIY, M. A., KROKHMAL', S. S., MAKAROVA, Z. O., NIKIFOROVA, I. P., POPLAV'SKA, L. I., and SLOVODYANYUK, Chair of Pathological Physiology, Vinnitsa Medical Institute

"Functional Response of Different Sections of the Brain to Extreme Stimuli"

Kiev, Fiziologicheskiy Zhurnal, No 5, 1972, pp 644-653

Abstract: Experiments on cats and rabbits showed that electrical activity of the cortex and subcortex, respiration, and arterial pressure are dependent on the original and present functional state of the nervous system. The effects of prolonged compression of soft tissues, increased intracranial pressure, alcoholic intoxication, asphyxia, blood loss, and various forms of hypertension were studied. Functional shifts were induced by preliminary injection of amphetamine sulfate or chlorpromazine, electrocoagulation of the anterior hypothalamus, and denervation of the sinocarotid and aortic vascular zones. Along with generalized and phasic reactions of electrical activity, cortical-subcortical dissociations occurred with signs of induction of the adjacent regions. A stress rhythm appeared quite often in the diencephalon and brainstem. The onset and course of the experimental pathology and accompanying electrical activity were dependent on both the original and

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BRYTVAN, Ya. M., et al., Fiziologicheskiy Zhurnal, No 5, 1972, pp 644-653

present functional state of the nervous system. The mechanisms of the observed phenomena cannot be ascribed solely to the generalized influence of the reticular formation or to corticofungal impulses. Various neurogenic components are involved and it is through their interaction that the integral reaction of the brain is achieved.

1/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--RECOVERY OF UREA FOR DEPARAFFINATION OF PETROLEUM FUELS -U-

AUTHOR-(03)-SELEZNEV, A.K., POPLAVSKAYA, A.V., VOROBYEVA, YE.I.

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (3), 43-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PROPULSION AND FUELS

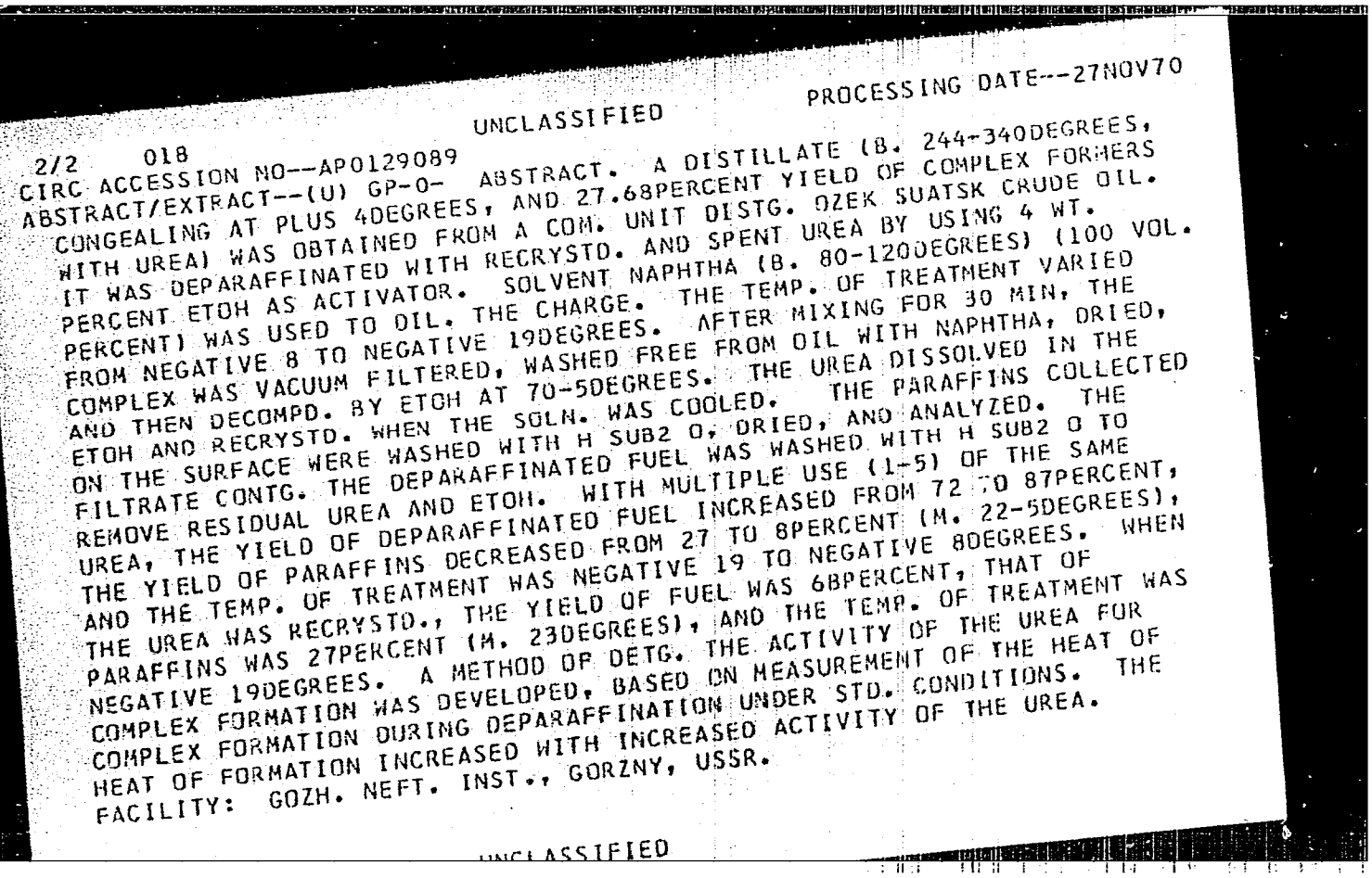
TOPIC TAGS--CRUDE OIL, LOW TEMPERATURE EFFECT, PETROLEUM FRACTION, DEPARAFFINATION, UREA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1721 STEP NO--UR/0318/70/000/003/0043/0044

CIRC ACCESSION NO--AP0129089

UNCLASSIFIED



UNCLASSIFIED PROCESSING DATE--27NOV70

2/2 018
CIRC ACCESSION NO--AP0129089
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DISTILLATE (B. 244-340DEGREES, CONGEALING AT PLUS 4DEGREES, AND 27.68PERCENT YIELD OF COMPLEX FORMERS WITH UREA) WAS OBTAINED FROM A COM. UNIT DISTG. OZEK SUATSK CRUDE OIL. IT WAS DEPARAFFINATED WITH RECRYSTD. AND SPENT UREA BY USING 4 WT. PERCENT ETOH AS ACTIVATOR. SOLVENT NAPHTHA (B. 80-120DEGREES) (100 VOL. PERCENT) WAS USED TO OIL. THE CHARGE. THE TEMP. OF TREATMENT VARIED FROM NEGATIVE 8 TO NEGATIVE 19DEGREES. AFTER MIXING FOR 30 MIN, THE COMPLEX WAS VACUUM FILTERED, WASHED FREE FROM OIL WITH NAPHTHA, DRIED, AND THEN DECOMPD. BY ETOH AT 70-5DEGREES. THE UREA DISSOLVED IN THE ETOH AND RECRYSTD. WHEN THE SOLN. WAS COOLED. THE PARAFFINS COLLECTED ON THE SURFACE WERE WASHED WITH H SUB2 O, DRIED, AND ANALYZED. THE FILTRATE CONTG. THE DEPARAFFINATED FUEL WAS WASHED WITH H SUB2 O TO REMOVE RESIDUAL UREA AND ETOH. WITH MULTIPLE USE (1-5) OF THE SAME UREA, THE YIELD OF DEPARAFFINATED FUEL INCREASED FROM 72 TO 87PERCENT, THE YIELD OF PARAFFINS DECREASED FROM 27 TO 8PERCENT (M. 22-5DEGREES), AND THE TEMP. OF TREATMENT WAS NEGATIVE 19 TO NEGATIVE 8DEGREES. WHEN THE UREA WAS RECRYSTD., THE YIELD OF FUEL WAS 68PERCENT, THAT OF PARAFFINS WAS 27PERCENT (M. 23DEGREES), AND THE TEMP. OF TREATMENT WAS NEGATIVE 19DEGREES. A METHOD OF DETG. THE ACTIVITY OF THE UREA FOR COMPLEX FORMATION WAS DEVELOPED, BASED ON MEASUREMENT OF THE HEAT OF COMPLEX FORMATION DURING DEPARAFFINATION UNDER STD. CONDITIONS. THE HEAT OF FORMATION INCREASED WITH INCREASED ACTIVITY OF THE UREA.
FACILITY: GOZH. NEFT. INST., GORZNY, USSR.

UNCLASSIFIED

USSR

UDC 546.74,77:620.182.2

KIRIYENKO, V. I., POPLAVSKAYA, E. E., and POTAPOV, L. P., Institute of the Science of Metals and Physics of Metals of the Central Institute of Ferrous Metallurgy imeni I. P. Bardin

"Effect of Alloying Elements on Ordering in Nickel-Molybdenum Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 33, No 6, Jun 72, pp 1260-1266

Abstract: A study was made of the effect of 2.09-2.39 at.% V on the ordering mechanism in nickel alloys with ~19 at.% Mo and on the character of the effect of 1.34 at.% Nb. The results are analyzed on the basis of hardness evaluations, roentgenographic investigations, and direct observation of the atomic structures of alloys by autoionization miecoscopy. The introduction of V produced a strong retardation of isothermic transformations, most strongly expressed at 800°C. Alloying with V and Nb widens the domain of the (α+Ni_3Mo) diagram of state into the low-temperature side, changing the Ni_4Mo transformation temperature. Hypotheses are suggested for a probable retardation mechanism of transformation processes. Four figures, eight bibliographic references.

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Acc. Nr: AP0041521 Abstracting Service: CHEMICAL ABST. 04/70 Ref. Code UR 0366

89995k Products of the reaction of α-chloro-α-isonitrosoacetone with aromatic amines. Azerbaev, I. N.; Kurmangalieva, R. G.; Poplavskaya, I. A. (Inst. Khim. Nauk, Alma-Ata, USSR). *Zh. Org. Khim.* 1970, 6(1), 66–8 (Russ). The reaction of MeCOCCl:NOH (I) with RNH_2 (R is 3-MeC_6H_4, 2,4-$Me_2C_6H_3$, 2,3-Me, ClC_6H_3, 4-$MeOC_6H_4$, 2-$MeOC_6H_4$, 2-EtO-C_6H_4, 2-MeC_6H_4, 3-HOC_6H_4, or 3-$H_2NC_6H_4$) in the presence of NEt_3 gave MeCOC(:NOH)NHR (II). Similarly, treating I with α-aminopyridine in pyridine soln. gave 10–13% α-(2-pyridylamino)-α-isonitrosoacetone (III). The reaction of II with NH_2OH gave MeC(:NOH)C(:NOH)NHR (IV); IV (R = 4-ClC_6H_4) was prepd. by treating MeC(:NOH)C(:NOH)Cl with 4-$ClC_6H_4NH_2$ in the presence of NEt_3; III does not react with NH_2OH.

CPJR

REEL/FRAME
19751389

UDC 669.295.015.3:543.42

USSR

DOTSENKO, S. N., POPLAVSKAYA, K. A., SEMENOVA, G. N., and KHUDYAKOVA, T. N.

"Spectrographic Testing of Impurities in Pigmented, Modified Titanium Dioxide"

Moscow, Metallurgiya i Khimiya Titana (Institut Titana), Metallurgiya Publishing House, Vol 6, 1970, pp 165-169

Translation: A method is developed for spectrographic testing of silicon, aluminum, zirconium, and iron in pigmented titanium dioxide modified by the "wet method." The spectra were photographed using an ISP-28 quartz spectrograph of average dispersion. The possibility of using production calibrating devices made of pigmented titanium dioxide, on the surface of which supplements of aluminum, silicon, and zirconium have been applied by the "wet method," and artificial calibrating devices in a spark and arc state is studied. The results received provide evidence that the spark state gives better reproducibility of results and two-fold less error in analysis than the arc state. The method ensures testing from 0.0076 to 0.018% Fe, 0.67-1.57% Al, 0.28-0.54% Si, and 0.30-1.52% (by mass) Zr. Four illustrations, three tables, and 19 bibliographic entries.

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UDC 632.95

USSR

AREN, A. K., FAL'KENSHTEYN, B. Yu., ZELMEN, V. N., YEGOROVA, L. V., OZOLIN', R. R., POPLAVSKAYA, N. I., and SHOFRO, E. A., Institute of Organic Synthesis, Academy of Sciences Latvian SSR

"Method of Preparing 2-(α-phenyl-α-p-fluorophenylacetyl)-1,3-indandione"

USSR Authors' Certificate No 263586, filed 14 Nov 67, published 4 Jun 70 (from RZh-Khimiya, No 1, 10 Jan 71, Abstract No 1N531P)

Translation: A mixture of 4.5 g metallic Na is heated at 130-140° in 50 ml anhydrous PhMe, 45 ml anhydrous MeOH is then added dropwise to the mixture. The mass is heated on an oil bath for 1-1.5 hr with intensive stirring, evaporated, and the residue cooled to 80° and treated with 150 ml anhydrous C_6H_6 and 20 g dimethyl phthalate. A mixture of 11.25 g freshly prepared phenyl-fluorophenylacetone in 50 ml anhydrous C_6H_6 is added dropwise over the space of 1 hr to the reaction mass, with a 50 ml mixture of C_6H_5 and MeOH distilled off at the same time. Then once more a mixture of 11.25 g freshly prepared 2-phenyl-2-p-fluorophenylacetone and 4 g anhydrous dimethyl phthalate in 50 ml anhydrous C_6H_6 is added dropwise, with 50 ml of solvents being distilled off. During condensation oil bath temperature is 118-120°. After components are mixed, the mixture is stirred for 10 hr at 118-120°,

USSR

Aren, A. K., et al., USSR Authors' Certificate No 263586, filed 14 Nov 67, published 4 Jun 70 (from RZh-Khimiya, No 1, 10 Jan 71, Abstract No 1N531P)

evaporated at 11-15 mm; the oily residue is treated with 800 ml cold water, and heated with stirring. The layer of water is decanted, and the crystalline residue treated analogously three or four times with water until it dissolves completely. Combined water layers are treated with 40 ml dilute HCl (acid, 1:1) until the reaction of the medium is acid, are stirred, kept for ~12 hr, and decanted. The amorphous residue is treated with 80 ml hot iso-PrOH and stirred. A yellow precipitate is filtered off, which is rinsed two or three times with 10 to 15 ml portions of cold iso-PrOH, to yield 15 g (42.5%) 2-(α-phenyl-α-ρ-fluorophenylacetyl)-1,3-indandione (I), melting point 121-5°. The isopropyl mother liquors are diluted with 100-150 ml water and decanted; the oily residue is treated with 5 ml HCL (acid, 1:1), to yield, as described above, an additional 3 g (8.5%) I. I possesses a broad spectrum of zoocidal action.

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1/2 032 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--DEPENDENCE OF THE BREAKDOWN THRESHOLD OF A TRANSPARENT DIELECTRIC ON LASER PULSE DURATION -U-

AUTHOR-(04)-NESTEROV, L.A., POPLAVSKIY, A.A., FERSMAN, I.A. KHAZOV, L.D.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL TEKHNICHESKOI FIZIKI, VOL. 40, MAR. 1970, P. 651-653

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER PULSE, DIELECTRIC BREAKDOWN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1256 STEP NO--UR/0057/70/040/000/0651/0653

CIRC ACCESSION NO--AP0115273

UNCLASSIFIED

2/2 032 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0115273

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL DETERMINATION OF THE ENERGY DENSITY THRESHOLD FOR LASER INDUCED SURFACE BREAKDOWN OF A TRANSPARENT DIELECTRIC AT GIVEN LASER PULSE DURATIONS AND BEAM DIAMETERS. AN EQUATION RELATING THESE FACTORS IS DERIVED FOR PULSE DURATIONS RANGING FROM 2 MICROSEC TO 20 NSEC AND SAMPLE DIAMETERS FROM 8.7 TO 340 MICRONS. THE EQUATION IS ALSO APPROXIMATELY ACCURATE FOR GIANT PULSE EMISSION OF ABOUT .001 SEC IN DURATION AND FOR INTERNAL BREAKDOWN OF THE MATERIAL. IT IS SUGGESTED THAT THE DEPENDENCE OF THRESHOLD POWER ON PULSE DURATION IS DUE TO THERMAL DIFFUSION FROM THE IRRADIATED ZONE.

UNCLASSIFIED

POPLAVSKIY, A.A.

RAP/ /R-760 /5 APR 73 71
Dec 72

(5)

Semenova, V. I. Electromagnetic wave reflection during oblique incidence on a moving ionization front. IVUZ Radiofiz, no. 5, 1972, 665-674.

An extensive theoretical analysis is given of the interaction of a monochromatic wave with a plasma boundary. The particular case considered is of inclined incidence of monochromatic TE and TM waves upon a sharply defined boundary of a plasma half-space, where the plasma is generated by ionizing radiation acting on a neutral gas. For simplicity the incident pulse is assumed arbitrarily narrow and the dielectric constant outside the plasma is taken to be unity. It is shown that when the E-field normal to plane of incidence, the solution for the inclined incidence case is essentially the same as for normal incidence. With the TM wave, however, inclined incidence is shown to generate two axial waves in addition to the transverse ones, at any given frequency of the incident wave. Formulas for the reflection and transmission of the latter are obtained and analyzed in terms of the idealized plasma parameters.

Kuznetsov, A. Ya., I. S. Varnasheva, A. A. Poplavskiy, and G. P. Tikhomirov. Destruction of reflective dielectric coatings by laser radiation. OMP, no. 3, 1972, 39-42.

The resistance of reflective coatings to laser radiation was studied using zinc sulfide and magnesium fluoride coatings. The coatings were applied by thermal evaporation in a vacuum, and the reflection factor was $R = 90\%$ at $\lambda = 0.7\mu$. The flux falling upon the specimen was controlled

Acc. Nr: AP0047607 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: UR0057

105059r Breakdown of dielectric reflecting coatings under the influence of laser radiation. Kuznetsov, A. Ya.; Poplavskii, A. A.; Bonch-Bruevich, A. M.; Imas, Ya. A.; Rozhdestvenskii, V. N.; Tikhomirov, G. P.; Fadeeva, E. I. (USSR). *Zh. Tekh. Fiz.* 1970, 40(1), 170–2 (Russ). The threshold of breakdown of coatings was measured as a function of the direction of the effect, the no. of coating layers, the temp. of the base during the application, the purity and structure of the starting materials, the degree of orientation of microcrystals in the layer, the presence of defects, and the structure of the layer. The breakdown threshold of vacuum dielec. coatings on K-8 glass depended on the degree of orientation and the structure of crystals in the ZnS layer, and on the compn. of the surface of the coatings. M. Tichy

REEL/FRAME
19791173

USSR

UDC: 8.74

POPLAVSKIY, N. N.

"Multidimensional Linear Correlation in Regression. The 'Korreg' Program. (Description, Instruction and Text of the Program)"

Tr. Zap.-Sib. n.-i. geologorazved. neft. in-t (Works of the West Siberian Scientific Research Institute of Geological Petroleum Prospecting), 1972, vyp. 55, pp 6-33 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V636 [author's résumé])

Translation: A program for the Minsk-22 computer evaluates basic distribution parameters (mathematical expectation, variance, asymmetry, excess); checks the correspondence between an empirical distribution and the normal theoretical distribution; finds paired, partial and multiple linear correlation coefficients; and determines the coefficients of multidimensional linear regression of any of the distinctive features with respect to the set of the remaining n - 1 features. The permissible number of features for joint processing is n = 32. The number of observations N (n-dimensional vectors) is no more than (4088 - n)/n.

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USSR UDC: 8.74

POPLAVSKIY, N. N.

"Pattern Recognition by a Master Pattern Method. The 'REM-216' Program"

Tr. Zap.-Sib. n.-i. geologorazved. neft. in-t (Works of the West Siberian Scientific Research Institute of Geological Petroleum Prospecting), 1972, vyp. 55, pp 96-111 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V667 [author's abstract])

Translation: The program is set up in Minsk-22 computer codes. Pattern recognition is with respect to a set of n distinctive features on the basis of definition of correspondence between a given object and one of the masters formed by covering instruction sets with n-dimensional ellipsoids. No assumptions are made on the distribution of distinctive features. Features of a discrete type may be included in addition to the measured features. The maximum number of features which can be handled at once is $n = 36 = 44_8$. The maximum possible number of observations N (n-dimensional vectors) in the instructional samples

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POPLAVSKIY, N. N., Tr. Zap.-Sib. n.-i. geologorazved. neft. in-t, 1972, vyp. 55, pp 96-111

is 216. However, the permissible volume of the teaching samples is determined by the relation $N \cdot n < 2040$.

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USSR

(1)

BOBROVNIK, I. I., GORBUNOV, K. I., KLOCHAN, V. I., MONASTYREV, V. K., POPLAVSKIY, N. N.

"Geoseismic Logging Procedure"

USSR Author's Certificate No 370567 (from Otkrytiya, Izobreteniya, Promyshlennyye obraztsy. Tovarnyye znaki (Discoveries, Inventions, Industrial Models, Trademarks), No 11, 1973, page 144)

Translation: The geoseismic logging procedure by reducing multichannel reflected wave recordings to one generalized track with utilization of mutual correlation functions, track selection by the threshold values of the similarity coefficients and summation with preliminary input of kinematic and static corrections is distinguished by the fact that in order to increase the reliability of wave correlation and determine the relations of the dynamic wave characteristics with physical-lithologic section parameters, two-halfperiod detection of the digital analog of the summogram, sliding integration with the time interval which is a multiple of the oscillation halfperiod and normalization of the recordings with respect to intensity of the excitation center and the amplification coefficients of the recording channel are used successively with subsequent conversion of the energograms by the law of formation of a sequence of partial sums of the theories.

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USSR

POPLAVSKIY, N. N.

UDC: 8.74

"Pattern Recognition by Methods of Multidimensional Statistic Analysis. The 'Romashka' Program (Description, Instructions and Text of the Program)"

Tr. Zap.-Sib. n.-i. geologorazved. neft. in-t (Works of the West Siberian Scientific Research Institute of Geological Petroleum Prospecting), 1972, vyp. 55, pp 53-95 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V666 [author's abstract])

Translation: The Minsk-22 computer program recognizes patterns in accordance with a set of n features by means of a linear and nonlinear discriminant function, and also a plausibility function. Depending on the equality or inequality of covariation matrices, the program itself determines the algorithm for construction of the separating surface. The proposed program is designed simultaneously for finding the most informative combination of features as well. In addition, the program enables recognition with respect to m sample (preselected) features out

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USSR

POPLAVSKIY, N. N., Tr. Zap.-Sib. n.-i. geologorazved. neft. in-t, 1972, vyp. 55, pp 53-95

of n initial features ($m < n$). The permissible number of features which can be treated simultaneously is $n = 20 = 24_8$, the number of observations N (n-dimensional vectors) in each teaching sample being no more than $(4088 - n)/n$, and in an examination sample -- no more than $(3028 - n)/n$.

2/2

1/2 028 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--"AUTOMATION OF MACHINE CONTROL SYSTEMS DESIGN" -U-

AUTHOR-(03)-DOBROLYUBOV, A.I., AKUNOVICH, S.I., POPLAVSKIY, V.S.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, MEKHANIZATISIYA I AVTOMATIZATSIYA PROIZVODSTVA, NO. 1, 1970, PP 36-39

DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--AUTOMATION, MACHINE INDUSTRY, AUTOMATIC CONTROL SYSTEM, ELECTRIC EQUIPMENT, COMPUTER, DESIGN STANDARD, ELECTRONIC CIRCUIT, HYDRAULIC DEVICE/(U)MINSK DIGITAL COMPUTER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REF /FRAME--1985/0241 STEP NO--UR/0118/70/000/001/0036/0039

CIRC ACCESSION NO--AP0100763

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100763

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS ASSERT THAT THE LABOR EXPENSE IN THE DESIGN OF MACHINE CONTROL SYSTEMS AMOUNTS TO 30 TO 50PERCENT OF ALL OF THE ELECTRICAL EQUIPMENT DESIGN. FOR THAT REASON IT IS WORTH WHILE TO REDUCE THE LABOR THROUGH AUTOMATION. THE ENGINEERING METHOD OF THE DESIGN SHOULD BE SUFFICIENTLY ALGORITHMIZED TO ENLIST THE AID OF AN ELECTORNIC COMPUTER. THE ADVANTAGE OF SUCH A METHOD IS ILLUSTRATED BY SEVERAL EXAMPLES OF SYSTEMS DESIGNED BY DRIVE MECHANISM CONTROLLED BY A SINGLE MAGNETIC TW4 POSITION SLIDE VALVE, A DIAGRAM OF WHICH IS GIVEN. THREE VARIANTS OF THE SYSTEM CONTROLLING THE MECHANISM, TWO OF WHICH ARE DESIGNED BY ORDINARY METHODS WHI THE THIRD IS DESIGNED BY A SYNTHESIS ALGORITHM DEVELOPED BY THE BELORUSSIAN ACADEMY OF SCIENCES ARE GIVEN. DIAGRAMS OF THE ELECTRICAL CIRCUIT OF THE SYSTEM AND THE CYCLOGRAM OF ITS OPERATION IN THE FIRST VARIANT OF THE CONTRC SYSTEM ARE GIVEN. DIAGRAMS OF THE OTHER TWO VARIANTS ARE ALSO PRESENTED. COMPARISON OF THE FIRST TWO VARIANTS, DESIGNED BY ORDINARY METHODS, SHOWS THAT IN THE SYNTHESIS OF THE SYSTEM BY THOS USUAL METHOD THE SOLUTION DEPENDS ON THE PAST EXPERIENCE OF THE DESIGNER. THE SECOND VARIANT IS DEFINITELY SUPERIOR AS A RESULT OF THE CLARITY AND REGULARITY OF ITS STRUCTURE AS WELL AS BY VIRTUE OF ITS USE OF ABOUT HALF THE EQUIPMENT. THE THIRD IS BETTER THAN THE FIRST TWO, HOWEVER, IN THAT IT DOES NOT REQUIRE HIGH QUALIFICATIONS AND LONG EXPERIENCE ON THE PART OF THE DESIGNER. AN ACCOMPANYING TABLE PRESENTS THE FUNCTIONAL CYCLOGRAM OF THIS THIRD SYSTEM AS OBTAINED BY THE "MINSK-22" COMPUTER.

UNCLASSIFIED

USSR

DOBROLYUBOV, A. I., et al., Moscow, Mekhanizatskiya i Avtomatizatsiya Proizvodstva, No 1, 1970, pp 36-39

control of a mechanism requiring eight inputs when synthesis by the engineering method is used, four intermediate relays are required, whereas 17 and 9 intermediate relays respectively were required for two ordinary systems. The new method of synthesizing systems permits utilization of computers, which is of great significance in achieving high rates of technical progress. A functional diagram of a system obtained on the Minsk-22 computer is presented in tabular form. The purpose of the system for automatic planning and designing of control systems developed at the Technical Cybernetics Institute of the Belorussian SSR Academy of Sciences is automatic planning and designing not only of the schematic but also of all the technical documentation entering into the plans for the schematic: the installation diagrams, the summary technical documents, and special operating documentation. The problem of automatic drawing of the schematics has been solved by using the graphical-drawing automaton ITYeKAN developed at the institute. ALGOL-60 is used for the planning and designing system software.
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USSR

UDC 62-5.002.5(084.2)

DOBROLYUBOV, A. I., Candidate of Technical Sciences, AKUNOVICH, S. I., POPLAVSKIY, V. S., Engineers

"Automatic Planning and Designing of Machine Tool Control Systems"

Moscow, Mekhanizatsiya i Avtomatizatsiya Proizvodstva, No 1, 1970, pp 36-39

Abstract: This article contains an analysis and evaluation of ordinary and automatic methods of planning and designing machine tool control systems. Flow charts of sample systems are presented and the various components and operating process are explained.

Comparison of the systems shows that for the ordinary procedure of compiling the system the solution depends on the experience of the designer. An automatically designed system is presented which has the advantage that high qualifications and great design and planning experience are not required to realize the construction method. Increasing the number of inputs of the mechanism does not lead to an increase in the number of relays, as occurs in other systems. For example, for
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1/3 010 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--EFFECT OF THE NONHORIZONTAL POSITION OF A SIEVE PLATE ON THE EFFECTIVENESS OF MASS TRANSFER UNDER FRACTIONAL DISTILLATION CONDITIONS

AUTHOR-(03)-KLIMOV, A.G., KAPITALNYY, V.G., POPLAVSKIY, YU.V.

COUNTRY OF INFO--USSR

SOURCE--GIDROLIZ. LESOKHIM. PROM. 1970, 23(2), 13-15

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MASS TRANSFER, FRACTIONAL DISTILLATION, BUTANOL, ACETATE, VAPOR PRESSURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1220 STEP NO--UR/0328/70/023/002/0013/0015

CIRC ACCESSION NO--AP0116683

UNCLASSIFIED

2/3 010 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0116683
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BECAUSE OF THE DISCREPANCY EXISTING BETWEEN THE OFFICIAL TOLERANCE VALUES FOR THE DEGREE OF DEVIATION OF PLATES FROM THE HORIZONTAL POSITION (TILTING, MEASURED IN MM) AND THE PRACTICAL POSSIBILITY OF ADJUSTMENTS UNDER INDUSTRIAL CONDITIONS, STUDY WAS MADE OF THE EFFECT OF TILTING ON MASS TRANSFER DURING RECTIFICATION TO OBTAIN DATA FOR A MORE REALISTIC APPROACH TO THE PROBLEM OF TOLERANCES. AN INDUSTRIAL SIEVE PLATE RECTIFICATION COLUMN (AS THE MOST SENSITIVE TO TILTING) WAS USED FOR SEPG. A MIXT. CONTG. 11 WT. PERCENT BUOH AND 89 WT. PERCENT BUOAC. COLUMN CONTROL INSTRUMENTS MADE IT POSSIBLE TO MAINTAIN A CONST. VAPOR PRESSURE IN THE REBOILER AND TO CONTROL THE TEMP., THE PRESSURE GRADIENT, AND THE AMT. OF REFLUX. THE EFFECTIVENESS OF THE MASS TRANSFER WAS EVALUATED FROM THE OVERALL EFFICIENCY COEFF. (RATIO OF THE THEORETICAL TO THE ACTUAL NO. OF PLATES), AND THE EFFECTIVENESS OF THE INDIVIDUAL PLATES FROM THE TEMP. PHASE COMPN. GRAPHS. ANY DEVIATION FROM THE HORIZONTAL POSITION OF A PLATE AFFECTS THE MASS TRANSFER ADVERSELY, ALTHOUGH THIS EFFECT IS LESS MARKED AT HIGHER VAPOR FLOW VELOCITIES. IN DETG. THE REQUIRED TOLERANCES, TECH. DIFFICULTIES RELATED TO INDUSTRIAL OPERATION OF A COLUMN MUST BE CONSIDERED, SINCE THE COLUMN OPERATES AT VARYING LOADS OF VAPOR AND LIQ. (IT CONSTITUTES A LINK IN CONNECTED EQUIPMENT). THUS, THE TOLERANCES SHOULD BE ESTABLISHED BY CONSIDEREING CONSTRUCTION FACTORS; IN DETG. THE NO. OF PLATES A CORRECTION SHOULD BE MADE FOR THE WORST POSSIBLE OPERATING CONDITIONS.

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202510018-0"

3/3 010 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116683

ABSTRACT/EXTRACT--THE CORRECTION CAN BE CALCD. FROM THE RELATION OBTAINED BETWEEN THE COLUMN EFFICIENCY, THE TILT OF THE PLATES, AND THE PERCENT. REDN. OF MASS TRANSFER. A 5 MM TILT IS FULLY ADMISSIBLE; IN SUCH CASE THE REDN. OF EFFICIENCY CAN BE COMPENSATED BY INSTALLATION OF A FEW ADDNL. PLATES.

UNCLASSIFIED

USSR

UDC 621.382.2

POPO, R.A.

"Effect Of Roentgen And γ Radiation On Epitaxial-Planar Silicon Diodes"

V sb. Radiats. fiz nemet. kristallov (Radiation Physics Of Nonmetallic Crystals--Collection Of Works), Vol 3, Part 2, Kiev, "Nauk. dumka," 1971, pp 205-208 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B561)

Translation: A semiconductor diode passivated by a SiO_2 film placed in a Type TO-5 housing with a removable cap was irradiated in an x-ray apparatus with a W anode at a voltage of 40 kv, a current of 5 and 30 ma, and from a source of γ-irradiation Co^{60}. The back current of the semiconductor diode was increased by 150-160 times. Recovery I_{back} was observed for 65 24-hour periods for one semiconductor diode of 10. It is assumed that a positive charge is formed in the film which depletes the carriers of the surface layer of the n-type and with which is also explained the behavior of the semiconductor diode after irradiation. 1 tab. I.M.

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USSR

UDC: 548.5

TSEYTLIN, M. N., PLAKHOV, G. F., LOBACHEV, A. N., POPOLITOV, V. I., SIMONOV, M. A., and BELOV, N. V.

"Investigating Crystallization in the Hydrothermal System of GeO_2-Sb_2O_3-KF-H_2O"

Moscow, Kristallografiya, vol 18, No 4, 1973, pp 836-839

Abstract: An investigation is conducted into the crystallization conditions in the GeO_2-Sb_2O_3-KF-H_2O system by the hydrothermal method. The purpose of this investigation is two-fold: first, to fill in the gaps of knowledge concerning the interaction chemistry of germanium dioxide and antimony trioxide in the presence of a solution at high temperatures and pressures; second, to obtain all possible single crystals with no analogs in nature because of their potential value as objects of study with regard to structure and physical characteristics. The experiments were conducted with a charge consisting of GeO_2 and Sb_2O_3 copper lined autoclaves with periodic action. The results of the examination of the crystallization in the system are given individually for each temperature jump in the range of 400-550° C, the jumps being made in 20-45° intervals. Photographs of the crystals are shown,

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USSR

UDC: 548.5

TSEYTLIN, M. N., et al, Kristallografiya, vol 18, No 4, 1973, pp 836-839

and a table of interplanar distances for $Sb_2Ge_2O_7$ crystals is given.

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1/2 021 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--HYDROTHERMAL METHOD FOR PREPARING A PRIMEV B PRIMEVI C PRIME VII COMPOUNDS -U-

AUTHOR-(02)-LITVIN, B.N., POPOLITOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(3), 575-6

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHALCOGENIDE GLASS, ANTIMONY, BISMUTH, TITANIUM, TEFLON, HYDROGEN SULFIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0895 STEP NO--UR/0363/70/006/003/0575/0576

CIRC ACCESSION NO--AP0118064

UNCLASSIFIED

2/2 021 UNCLASSIFIED

CIRC ACCESSION NO--AP0118064 PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HIGH TEMP. SYNTHESIS OF A PRIMEV B PPRIMEVI C PRIMEVII (A EQUALS SB, BI; B EQUALS S, SE, TE; C EQUALS CL, BR, I) FROM AQ. SOLNS. UNDER PRESSURE (HYDROTHERMAL METHOD) IS DESCRIBED. IN ALL CASES, PH 3-6 AQ. SOLNS. AT THE PARTIAL H SU82 S PRESSURE OF 0.2-1.5 ATM, CHALCOGENIDES OF SB AND BI FORM WITH THE YIELD BEING CLOSE TO 100PERCENT. THE SYNTHESIS WAS PERFORMED IN CONVENTIONAL HYDROTHERMAL REACTORS WITH THE USE OF TEFLON OR TI LINING AT 250-320DEGREES, PRESSURE OF 200-600 ATM, AND TEMP. GRADIENT OF 0.3-0.8DEGREES-CM. ALL THE CRYSTALS OBTAINED HAVE AN ACICULAR HABIT, WHICH IS ASSOCD. WITH THE PRCULIAR CHAINLIKE STRUCTURE OF THESE COMPDS. MOST OF THE CRYSTALS ARE NONTRANSPARENT, AND OF BLACK OR GREYISH COLOR. SBSI HAS A RED COLOR, AND SBS8R IS ORANGE. FACILITY: INST. KRISTALLOGR., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 8.74

POPOV, A. A., LAVRIV, Ya. M., STARCHIK, V. P., CHEKAYLO, M. A., SHUL'GA, V. A., SHCHITKO, V. N., YANENKO, V. M.

"Automated System for Statistical Analysis of Medical and Biological Data"

Kibernet. i vychisl. tekhn. Resp. mezhved. sb. (Cybernetics and Computer Technology. Republic Interdepartmental Collection), 1972, vyp. 14, pp 76-82 (from RZh-Kibernetika, No 5, May 73, abstract No 5V778 by the authors)

Translation: The paper discusses the functioning of an automated system for analysis of medical and biological data. Requirements for the software system are given. Statistical methods and criteria are presented which are realized in the system.

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USSR

POPOV, A. A.

"Elementary Computer Device for Experimental Multimachine Computer Complex"

Vychisl. Sistemy [Computer Systems -- Collection of Works], No 51, Novosibirsk, 1972, pp 108-115 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V599, by the author).

Translation: The structure and general characteristics of an elementary computer device (ECD) for a multimachine computer complex are described. The autonomic and systems capabilities of the ECD are studied. The set of instructions for the ECD is presented.

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USSR

UDC 624.91

POPOV, A. A., Docent, Candidate of Architecture

"Cross-Ribbed Roof of a Theater in Tula"

Moscow, Beton i Zhelezobeton, No 6, June 1972, pp 25-28

Abstract: The Drama Theater in Tula, built in 1955-1970, is suitable for versatile use by virtue of convertability of the auditorium and the stage. The hall can be adapted for 620, 835, 1180, and 1320 spectators, conversion is accomplished by the expansion of auditorium walls and the use of collapsible rostra in the side amphitheaters. This is the first theater in the world to use such a system of auditorium and stage conversion.

The theater roof constitutes a 3-dimensional prefabricated-unit reinforced-concrete plate, resting upon columns at six-meter intervals along the building perimeter and, within the building, upon geometrically "freely" situated supports, the location of which is determined by considerations of function and composition.

The theater building was awarded a State Prize of the RSFSR in 1971. 2 figures.

1/1

POPOV, A. A.

Gas Analysis

ARMY/FSTC FMT-23-830-72

Joyce

DEPARTMENT OF THE ARMY
U.S. ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER
220 SEVENTH STREET NE.
CHARLOTTESVILLE, VIRGINIA 22901

In Reply Refer to:
FSTC-HT-23-830-72
DIA Task No. T70-23-01

Date: 26 June 1972

TRANSLATION

ENGLISH TITLE: Use of a High-Temperature Fuel Cell in Gas Analysis

FOREIGN TITLE: Ispol'zovaniye vysokotemperaturnogo toplivnogo elementov v analize gazov

AUTHOR: S. I. Bykov
A. V. Silakov
Yu. A. Nikhayina
G. S. Tyurikov

LANGUAGE: Russian

SOURCE: Zavodskaya Laboratoriya No. 12, pp 1448-1451, (1970)

TRANSLATOR: Leo Kanner Assocs.

REQUESTOR: ARMST-CE Mr. Suri

ABSTRACT: Gases may be analyzed in apparatus containing a high-temperature fuel cell. Carbon dioxide, hydrogen, carbon monoxide, and hydrocarbons can be determined under certain conditions.

DESCRIPTORS: Gas Analyzer
Fuel Cell
Gas Analysis
Polarographic Analyzer
Polarographic Analysis

USSR DIVISION/CRS
AUG 31 3 31 PM '72

CONTENTS NOT REPRODUCIBLE

This translation was accomplished from a xerox manuscript. The graphics were not reproducible. An attempt to obtain the original graphics yielded negative results. Thus, this document was published as is, in order to make it available on a timely basis.

21722-64-8

POPOV, A.A.

medicine

JPRS 55439

15 March 1972

UDC 002.513.5:61

AN INFORMATION MODEL OF THE THERAPEUTIC PROCESS

[Article by A. A. Popov, V. M. Yanenko and V. A. Shul'ga; Kiev, Kibernetika, Russian, No 6, 1971, submitted 1 June 1970, pp 122-129]

At the present time medical data systems are being developed in the USSR and abroad for the purpose of increasing the effectiveness of medical institutions. In the course of this, resources are focused on the resolution of both administrative-management tasks and tasks connected with increasing the efficacy of therapeutic measures, with improvement of the utilization of beds, expensive, specialized medical equipment, etc. (3), (5), (8). In this relation the construction of an information model of the therapeutic process and subsequent construction of an automated system of administering the therapeutic process is an important task which must be resolved jointly by medical and systems technology personnel.

Component Parts of the Therapeutic Process

The therapeutic process is a combination of recognition and control actions, i.e. a combination of diagnosis and subsequent prognosis of the course and outcome of a disease, and designation of therapy. Diagnosis, as a process, consists of perception of the essence of a reflection of objectively existing states of the living organism in the consciousness of man (physician-diagnostician). Prognosis in the model of the therapeutic process determines the degree enabling assessment of the risk of a concrete control (therapeutic) action. The therapeutic usually is considered as consisting of two stages, A and B (1), (2), (4).

The first stage, A, begins with examination of the patient (study of his status presents, i.e. study of the symptom group, ECG, etc.), and ends with the establishment of the nosological form of the disease. This stage consists of the following two phases:

(1) collection and primary processing of data on the status of health of the patient;

(2) determining the disease diagnosis on the basis of analysis of the gathered information (analysis of objective and subjective disease

symptoms, status and assessment of symptoms in relation to degree of completeness, reliability, etc.); this phase includes:

(a) establishing the morphological essence of the disease of the given patient;

(b) determination or diagnosis of the functional status of individual organs and systems of the disease resulting from the pathological process in them or its indirect effects;

(c) determining the diagnosis of the disease.

In this phase the nosological form of the disease is determined on the basis of the entire aggregate of symptoms collected in the examination of the patient (anamnestic and physical, objective and subjective) and on the basis of the morphological and functional status of the patient. In this phase, traits appear in the clinical picture presented by the patient which are more or less common to all patients suffering from the same disease.

The average statistical, or any other degree of diagnosis of a disease inherent to this stage is partially transformed into a "diagnosis of the patient" (according to S. P. Botkin) in the next phase, in Stage B.

The second stage, Stage B, begins with establishment of the "diagnosis of the patient," on the basis of which prognosis of the course and the outcome of the disease are made, and optimal therapeutic action is indicated. This stage consists of the following phases:

1. Establishing specific manifestations and peculiarities of the course of the given disease. In a particular patient this takes place in the process of determining the diagnosis of the patient, which precedes prognosis of the course and outcome of the disease.

2. Prognosis of the course and outcome of the disease. Prognosis of the disease, made on the basis of diagnosis of the patient, with consideration of various therapeutic measures, must have a concrete, objective character, while at the same time being relative to both the concept of strict individualization, and the concept of the dynamics of time. Choice of the correct prognosis is extremely important to development of the optimal plan of therapeutic measures in relation to the patient.

3. Working out a concrete strategy of therapy. In working out a correct, optimal therapy, its efficacy, toxicity, cost, etc. must be taken into account.

4. Assessment and correction of control measures. The therapeutic process may vary according to duration, and thus may be repeated various times, such as from two minimal treatments to many scores of treatments, as

USSR

UDC 518.5:681.3.06

KRISILOV, A. D., YANENKO, V. M., POPOV, A. A., YASINOVSKIY, M. A., SAPRYGIN, Y. G.

"The Problem of Algorithmization of the Differential Diagnosis of Rheumatism"

Kibernet. i Vychisl. Tekhn. Resp. Mezhved. Sb. [Cybernetics and Computer Engineering, Republic Interdepartmental Collection], No 7, 1970, pp 102-107, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V641 by the authors).

Translation: A list of characteristics is suggested for description of diseases being diagnosed, including, in addition to the symptoms, certain intermediate diagnostic information. The applicability is demonstrated and certain altered statistical decision rules are calculated by computer. Results are presented from machine differential diagnosis of five diseases and the direction of further work is noted.

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USSR

UDC: 681.3.06:51

LAVRIV, Ya. M., MEL'NIKOV, V. G., POPOV, A. A., STARCHIK, V. P., YANENKO, V. M.

"Formation of an Information Block of Medical Documents in a Clinical Medical Information System"

V sb. Biol., med. kibernet. i bionika (Biology, Medical Cybernetics and Bionics--collection of works), vyp. 3, Kiev, 1970, pp 3-11 (from RZh--Kibernetika, No 7, Jul 71, Abstract No 7V720)

Translation: The existing practice of collecting and storing information in a public health system leads to redundant and partially erroneous data presented in handwritten form, inconvenient for analysis and formulation of a diagnosis. To effectively ensure public health functions, a medical information system is proposed which is a cybernetic system of the "man-automaton" type. The system includes the medical personnel who take care of collecting medical information on the appropriate standard form for the history of an illness as well as evaluating the results of information processing; the system also includes the mathematicians who develop the mathematical apparatus for collecting and processing data

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202510018-0"

LAVRIV, Ya. M. et al., Biol., med. kibernet. i bionika, vyp. 3, Kiev, 1970, pp 3-11

(create a flowchart and language for communication between the digital computer and man, algorithms and programs for processing medical information), and the engineering and technical personnel who service the technical facilities of the system. The authors note two approaches to solution of the problems of ensuring effective communication between the physician and the digital computer, and operational accumulation and transmission of information in a form to which the physician is accustomed: 1) development of a specialized medical logical information language, which requires formalizing the representation of the initial data, introducing correctives into the identification of terms, etc.; 2) development of a standardized form for the history of an illness as a preliminary stage to complete formalization. The principles of standardized forms for the history of an illness in the cardiological group are described. The form consists of an explanatory section (algorithms for examination of a patient for various illnesses) and a summarizing section (model or parameters of the state of the patient). An example of a fragment of a standardized form for the history of an illness is described ("Circulatory Organs"). A. Doroshenko.

1/2 033 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EFFECT OF HYDROGEN ON THE STRUCTURE AND PROPERTIES OF ALLOY VT5L -U-

AUTHOR-(05)-KOLACHEV, B.A., KHODOROVSKIY, G.L., POPOV, A.A., BUKHANOVA, A.A., SEDOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--LITEINOE PROIZVOD. 1970, 2, 29-30

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TITANIUM ALLOY, ALLOY DESIGNATION, ALLOY COMPOSITION, HYDROGEN EMBRITTLEMENT, METAL CONTAINING GAS, GAS CONTAINING METAL, MECHANICAL PROPERTY, HYDRIDE, METAL MICROSTRUCTURE/(U)VT5L TITANIUM ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1678 STEP NO--UR/0128/70/002/003/0029/0030

CIRC ACCESSION NO--AP0118656

UNCLASSIFIED

2/2 033 UNCLASSIFIED

CIRC ACCESSION NO--AP0118656 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TI ALLOY CAONTAINED AL 5.05-5.34, FE 0.08-0.14, SI 0.06, O 0.04-0.1, N 0.015-0.017, C 0.09-0.10, AND H 0.003-0.006PERCENT. THE MECH. PROPERTIES WERE STUDIED AT MINUS 70 TO 20DEGREES FOR A H CONTENT OF 0.003-0.05PERCENT. AT THESE TEMPS. THE ALLOY BECAME BRITTLE WHEN THE H CONTENT WAS GREATER THAN 0.035PERCENT. HOWEVER, IF THE ALLOY WAS EXPOSED TO MINUS 60DEGREES FOR 3 DAYS IT BECAME BRITTLE AT LOWER H LEVELS. THE EMBRITTLEMENT WAS CAUSED BY HYDRIDE FORMATION, WHICH WAS OBSD. IN THE MICROSTRUCTURE WHEN THE H CONTENT EXCEEDED THE SOLY. LIMIT. THE STRENGTH OF THE ALLOY INCREASED AS THE H CONTENT INCREASED TO 0.015PERCENT, BUT AT A H LEVEL ABOVE THIS VALUE THE STRENGTH DECREASED.

UNCLASSIFIED

USSR

UDC: 8.74

PANAYOTI, B. N., POPOV, A. A.

"Iterational Method of Solution of a System of Linear Equations Using a Computer System"

Elektron. Tekhnika. Nauch.-tekhn. Sb. Mikroelektronika [Electronic Equipment, Scientific and Technical Collection on Microelectronics], 1972, No 1(35), pp 29-36 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V575, by the authors)

Translation: Microelectronic computer systems are generally multiprocessor systems. Using the example of solution of the system of linear equations, a new approach is suggested to the organization of the computer process in such systems, requiring no program correction in case of failure of processors. Convergence of an iterational process in a computer system consisting of computers of different productivities is demonstrated with arbitrary distribution of equations through the computers.

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USSR

UDC 612.397.2+612.461.269.018:612.453/-06:612.592.1

KHOMULO, P. S., POPOV, A. A., and DMITRIYEVA, N. A., Chair of Pathological Physiology and Central Scientific Research Laboratory, Leningrad, Sanitary - Hygiene Medical Institute and Leningrad Pediatric Medical Institute

"Changes in Lipid Metabolism and Excretion of 17-Hydroxycorticosteroids With Urine in Polar Explorers During Adaptation to Life in the Antarctic"

Moscow, Kardiologiya, No 9, 1972, pp 48-52

Abstract: Blood cholesterol and phospholipid levels and excretion of 17-hydroxycorticosteroids with urine were studied in 98 members of the 1968-1970 Soviet Antarctic Expedition age 24 to 50. During the first month in the Antarctic the total blood cholesterol and phospholipid content increased proportinnately but 6 months later the phospholipid concentration decreased while the cholesterol level remained high. These changes were directly related to the length of time spent in the Antarctic and independent of the food eaten. The cholesterol level was highest in those in the 41- to 50-year group and lowest in those under 30. The disturbance of lipid metabolism in the 6th month is similar to that observed in persons with active atherosclerosis. At this time there was also increased excretion of 17-hydroxycorticosteroids with urine, suggesting that the cause of the elevated blood

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USSR
KHOMULO, P. S., et al., Kardiologiya, No 9, 1972, pp 48-52

cholesterol level was intensified activity of the adrenal cortex. After 11 months the cholesterol level dropped but it was still higher than in the control group (persons of the same age in Leningrad).

2/2

Acc. Nr AP0049989 Abstracting Service: CHEMICAL ABST. 4/70 Ref. Code UR 0131

82427t Dehydration, rehydration, and sensitivity of Troshkovskii clays to drying. Panov, A. D.; Shchetnikova, I. L.; Chukreeva, E. I.; Kelareva, E. I.; Gaeva, R. T. (Vost. Inst. Ogneupor., Sverdlovsk, USSR). *Ogneupory* 1970, 35(1), 23–9 (Russ). The temp. interval and the dehydration kinetics of the Troshkovskii clays, their sensitivity to drying, and the possibility to intensify the drying without forming cracks were studied. To study dehydration processes at high temps. all samples of clays were 1st dried to const. wt. at 60°. According to dehydration curves some samples (*A*) loose a small amt. of H_2O at low temps. (100–200°). It is in abs. accord with DTA: on DTA curves up to 200°C slight initial endothermal effects are evident. Other samples (*B*) of the Troshkovskii clays lose nearly all adsorbed H_2O at 100–200°. The amt. of H_2O adsorbed is of 2 kinds; it is caused by the presence of Mg^{++} and Ca^{++} in the exchange com-

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REEL/FRAME
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plex. The dehydration of clays is considerably dependent on duration of heating. Samples (*A*) dehydrate almost fully at 100° during 20–30 min while samples (*B*) during 90–100 min. The dehydration is accelerated by increasing temp. to 150–200°. For all samples the escape of adsorbed water is complete at ~300°. Samples after thermal treatment again take up water. This rehydration of samples was detd. from the wt. changes of samples annealed at 100, 200, 300, and 500° and then exposed at room temp. to relative air moisture of 25 and 75%. The rehydration increases with increasing content of the montmorillonite in the clay. All samples after thermal treatment at 100° adsorb much more water than untreated samples. The thermal treatment >300° brings about a lower rehydration. The removal of adsorbed water from montmorillonite is the main cause of propensity of some Troshkovskii clays to cracking. Preliminary treatment of the Troshkovskii clays contg. montmorillonite at 300–400° achieves partial dehydration; also, it decreases rehydration and sensitivity to drying.

J. Jindra

3/2

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19801928

POPOV, A. F.

96. Inter-VUZ Scientific Production Conference on Land Management

Date and Location: 26-29 Jan 65; Moscow at the Moscow Inst of Engineers

Remarks: More than a 100 scientific workers and production representatives took part in the work of the geodetic section. The reports of the following docents of the Institute were presented: Yu. G. Batrakov, S. M. Dvoryankov, Yu. K. Neumyvakin, M. I. Korobochkin, A. F. Popov, and K. S. Zykov. Professor V. F. Deyneko gave the concluding report.

Source: Moscow, Geodeziya i Kartografiya, No 4, April 1965, p 77.

SO: JPRS: 31,384, 3 Aug 65, unel

S/882/62/000/002/029/100
A057/A126

AUTHORS: Zhigach, A.F., Popov, A.E., Vishnevskiy, L.D., Antipin, L.M., Korneyev, N.N., Bezukh, Ye.P.

TITLE: A method for the preparation of triisobutylaluminum

SOURCE: Sbornik izobreteniy; plastmassy i sinteticheskiye smoly. no. 2. Kom. po delam izobr. i otkrytiy. Moscow, TsBTI, 1962, 18 [Author's certificate no. 125563, cl. 12o, 2603 (appl. no. 619817 of February 17, 1959)]

TEXT: The presented method is simpler and more economic than corresponding known methods. It is characterized by the activation of aluminum powder through heating at about 200°C with triisobutylaluminum and hydrogen in the presence of an inert diluent during approximately 10 h. 40g aluminum powder, 140 g triisobutylaluminum, and 180 g gasoline are charged into a rotating, electrically heated autoclave, then the pressure is raised to 10 - 15 atm with hydrogen, heated to 185 - 195°C, and mixed at this temperature for 14 h. Afterwards the reaction mass is cooled to room temperature in the autoclave, 460 g isobutylene added, a

Card 1/2

S/882/62/000/002/029/100
A057/A126

A method for the preparation of triisobutylaluminum

pressure of about 140 - 80 atm with hydrogen established, and the mass heated to 175 - 180°C. A constancy of the pressure indicates the end of the reaction. The total content of triisobutylaluminum in the reaction mass is 252 g, corresponding to an overweight of 112 g, i.e., a 38% yield related to aluminum. The use of a very fine aluminum powder increases the yield to 92%. The patent was sent to the Goskomitet SM SSSR po khimii (Goskomitet CM USSR for Chemistry) for use in industry.

[Abstracter's note: Complete translation]

Card 2/2

Popov, A.F.

~~25(1)~~ 5.3700 (B)

S/019/60/000/02/037/221
D031/D005

AUTHORS: Korneyev, N.N., Zhigach, A.F., Popov, A.F., Vishnevskiy, L.D., Antipin, L.M. and Bezukh, Ye.P.

TITLE: A Method of Obtaining Triisobutyl Aluminum

PERIODICAL: Byulleten' izobreteniy, 1960, Nr 2, p 13 (USSR)

ABSTRACT: Class 12o, 26_{03}. Nr 125563 (619817/23 of 17 February 1959). The method is for obtaining triisobutyl aluminum by means of interaction of the activated aluminum powder with hydrogen and isobutylene. To simplify the process and reduce its cost, the aluminum powder is activated by heating it at a temperature of 200° C with triisobutyl aluminum and hydrogen in the presence of an inert diluent for 10 hours.

Card 1/1

S/019/60/000/017/008/070
A152/A029

AUTHORS: Zhigach, A.F.; Popov, A.F.; Larikov, Ye.I.; Kolpakov, A.L.

TITLE: A Method for Distilling Triisobutylaluminum

PERIODICAL: Byulleten' izobreteniy, 1960, No. 17, p. 20

TEXT: Class 12o, 26_{03}. No. 131352 (645883/23 of December 2, 1959). This method entails distillation of triisobutylaluminum in the flow of an inert gas. In order to raise the temperature of distillation and suppress a decomposition of triisobutylaluminum that then arises, the distillation is done at atmospheric or at an increased pressure.

Card 1/1

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18.7400

S/019/60/000/03/189/260
D039/D006

AUTHORS: Zhigach, A.F., Popov, A.F., Larikov, Ye.I., and Pchelkina, M.A.

TITLE: A Method for Aluminizing Steel Products With Gas

PERIODICAL: Byulleten' izobreteniy, 1960, Nr 3, p 46 (USSR)

ABSTRACT: Class 48b, 13. Nr 125994 (634632/22 of 23 Jul 59). The introduction of aluminum into the surface of steel is performed by means of thermal decomposition of vapors of diisobutylaluminumhydride in a hydrogenous atmosphere at 300°C, with subsequent diffusion of separated aluminum into the steel's surface at a temperature of 850-900°C.

Card 1/1

Microbiology

USSR

UDC 616.981.57-612.178

VOLKOVA, I. N., Professor, and POPOV, A. F., Candidate of Medical Sciences, Departments of Physiology and Clinical Surgery, Kazan' Medical Institute imeni S. V. Kurashov, Kazan'

"The Effects of B. perfringens Toxin on the Functional State of Extracardial Innervation"

Kazan', Kazanskiy Meditsinskiy Zhurnal, No 1, 1973, pp 32-34

Abstract: Studies on the effects of intoxication with B. perfringens toxin on the innervation of the heart were conducted with dogs injected intramuscularly with different quantities of the toxin. The results showed that while the threshold for stimulation of the vagus nerve was raised and, consequently, the inhibitory effect of the vagus on the heart was decreased, this was a nonspecific effect which is frequently observed in other infections (diphtheria, peritonitis). However, studies with sympathetic stimulation showed that injection of the toxin initially elevated the threshold of stimulation at 2-3.5 hrs (from a normal of 7.13±0.78 ma to 8.15±2.3 ma) and depressed the positive inotropic and chronotropic effects (from 185.2±10.6% to 137.8±9.46% and from 114.6±4% to 109.0±4.0%, respectively). At 4 hrs the threshold for the stimulation of the sympathetic innervation of heart was lowered to 3.16±0.8 ma in the toxin treated dogs, and

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USSR

VOLKOVA, I. N. and POPOV, A. F., Kazanskiy Meditsinskiy Zhurnal, No 1, 1973, pp 32-34

the positive inotropic and chronotropic effects were increased to 215.6±16% and 121±2.3%, respectively. At the end of the first postinjection day the respective parameters for the sympathetic threshold, positive inotropic and chronotropic effects were 7.0±1.96 ma, 121.9±2.5%, and 105.0±1.0%. Chronic experiments with daily administration of small quantities of the toxin weakened the positive inotropic effect due to sympathetic stimulation. The results were explained on the basis of decreased synthesis of the adrenergic mediators in the adrenals as a result of toxin administration.

2/2

1/2 012 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--KINETICS OF THE REACTION OF AMINES WITH PHENACYL BROMIDE -U-

AUTHOR-(03)-LITVINENKO, L.M., POPOV, A.F., GELBINA, ZH.P.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2) 356-63

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--REACTION KINETICS, AMINE, BROMINATED ORGANIC COMPOUND, BENZENE DERIVATIVE, STERIC HINDRANCE, TRIETHYLAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1580 STEP NO--UR/0079/70/040/002/0356/0363

CIRC ACCESSION NO--AP0112574

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0112574

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KINETIC DATA WERE REPORTED FOR THE TITLE REACTION AT 25DEGREES IN C SUB6 H SUB6 AND PHNO SUB2. THE REACTIVITY OF THE AMINES VARIES WITH STRUCTURE AND DECREASES WITH INCREASING SHIELDING OF THE N ATOM BY STERIC HINDRANCE FROM THE R GROUPS. THE VARIATION FITS WELL INTO THE SWAIN SCOTT EQUATION (1953). THE SHARP DEPARTURE OF DATA FOR PHNH SUB2 FROM THE RECTILINEAR CORRELATIONAL PLOT OF ALKYLAMINES IS CAUSED BY DIFFERENCES OWING TO SOLVATION OF THIS AMINE IN PROTONATED SOLVENTS USED FOR CALCN. OF NUCLEOPHILICITY AND THE SOLVENTS USED FOR THE TITLE REACTION IN THE PRESENT WORK. IN PASSING FROM C SUB6 H SUB6 TO PHNO SUB2 THE REACTION RATE INCREASED FOR ALL AMINES BY A NEARLY CONST. AMT. AND AGREED WITH SIMILAR CHANGE IN REACTION RATE OF AMINES WITH ALKYL HALIDES. THE AMINES USED WERE PHNH SUB2, MENH SUB2, BUNH SUB2, ET SUB2 NH, AND PIPERIDINE.

UNCLASSIFIED

Popov, A. G.

L 18471-63 EWP(j)/EPF(c)/EWT(m)/BDS AFFTC/ASD Pc-4/Pr-4 RM/WW/ USSR
MAY/MLK(a)
ACCESSION NR: AP3007459 S/0286/63/000/009/0051/0051 72

AUTHOR: Popov, A. G.; Tokareva, L. G.; Mikhaylov, N. V.; Andrianov, K. A.; Volkova, L. M.

TITLE: Method for increasing the heat resistance and light stability of polypropylene and polypropylene products (fibers, films, etc). Class 39, No. 154389

SOURCE: Byul. izobret. i tovarn. znakov, no. 9, 1963, 51

TOPIC TAGS: plastics, polyolefins, polypropylene, polypropylene product, heat resistance, light stability, polypropylene property, property, stabilizer, siloxanes, cyclosiloxanes

ABSTRACT: An Author Certificate has been issued for a method of increasing the heat resistance and light stability of polypropylene and polypropylene products by the use of such stabilizers as cyclosiloxanes.

ASSOCIATION: none

Card 1/2

L 18471-63
ACCESSION NR: AP3007459

SUBMITTED: 23Mar62 DATE ACQ: 140ct63 ENCL: 00

SUB CODE: MA NO REF SOV: 000 OTHER: 000

Card 2/2

USSR

UDC: 534.3:534.1

POPOV, A.G., Tula

"Effect of Torsional Inertia on Natural Frequencies of Cylindrical Shell"

Kiev, Prikladnaya Mekhanika, Vol 9, Vyp 2, Feb 73, pp 124-128

Abstract: Theoretical and experimental investigation of vibrations of cylindrical shells was conducted. A magnetostrictive vibrator energized by an ultrasonic generator excited longitudinal vibrations in the wave guide, which transformed them into radial bending oscillations of the cylindrical shell attached to it. The amplitude of vibrations was measured by means of an induction pickup. The vibration mode could be observed optically using a stroboscopic light. The natural frequencies were determined by varying the exciting frequency until resonance occurred. The theoretical analysis took into account the torsional displacements. The differential equations were integrated numerically for a specific shell. Following curves of natural frequency versus number of nodes around the circumference are shown on a graph: experimental curve, theoretical curve obtained by the method described in the subject article, theoretical curve

USSR

POPOV, A. G., Prikladnaya Mekhanika, Vol 9, Vyp 2, Feb 73, pp 124-128

obtained by the classical method, theoretical curve obtained by the method given in "Theory of Plates and Shells" by S. P. Timoshenko.

2/2

USSR

UDC: 621.375.82

MAKHORIN, V. I., POPOV, A. I., PROTSENKO, Ye. D.

"Retuning Helium-Neon Laser Wavelength from 3.3912 to 3.3922 μm"

Moscow, Kvant. elektronika--sbornik (Quantum Electronics--collection of works), No 1(13), "Sov. radio", 1973, pp 47-55 (from RZh-Fizika, No 8, Aug 73, abstract No 8D1041 by the authors)

Translation: An investigation is made of the competition of lines with $\lambda_0 = 3.3912$ μm and $\lambda_1 = 3.3922$ μm in a helium-neon laser. It is theoretically determined that the maximum emission output on line λ_1 is equal to 50% of the power on line λ_0. The experimental output was 40% of the given power. The rate of decay of the lower level of line λ_1 is determined, and it is found that the rate of decay of the lower levels of these lines is independent of pressure. Bibliography of 9 titles.

1/1

USSR

UDC 62-525:621.375

DVORETSKIY, V. M., MOLCHANOV, G. G., POPOV, A. I., SHCHEPIN, E. K.

"A Fluidics Element"

USSR Author's Certificate No 295910, Filed 21/11/69, Published 9/04/71, (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11, 1971, Abstract No 11 A131 P).

Translation: A fluidics element is suggested, containing two counter connected supply nozzles, a drain chamber, and an output chamber with a non-moving dividing barrier between them. In order to increase the accuracy, a control chamber with a membrane, on which is fastened a moving barrier which intersects the power stream, is connected to the output chamber of the element.

1/1

USSR

UDC 621.378.33

GUBIN, M. A., POPOV, A. I., PROTSENKO, Ye. D.

"Investigation of Competition Between Two Axial Modes in a Laser With a Uniformly Broadened Line"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 4, "Sovetskoye Radio", 1971, pp 34-40

Abstract: A simple experimental method is used in a detailed study of the mechanism of interaction between two optical fields in a helium-neon laser, taking the 3.39-micron transition of the $3s_2$-$3p_4$ line in neon as the model for a uniformly broadened transition. A number of supporting facts are given to demonstrate uniformity of broadening on this transition. An investigation was made of the region of stable two-frequency emission as a function of the working parameters of the laser. The transition from two-frequency to single-frequency emission as the competing modes approach each other was studied. In contrast with solid-state lasers, where the effects associated with the dip formed in a homogeneous line in the event of monochromatic field saturation are masked by spatial nonuniformity of the inversion, these effects can be observed in pure form on the 3.39-μ

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202510018-0"

USSR

GUBIN, M. A. et al., Kvantovaya Elektronika, No 4, "Sov Radio", 1971, pp 34-40

transition in the He-Ne laser. The observed effects are explained by a simple physical model which utilizes this phenomenon of formation of the dip in the uniformly broadened line as a result of the saturating field effect. From the qualitative standpoint, the effects can be generalized to other lasers with a uniform line when the condition $T_2 \ll T_1$ is satisfied (where T_1 and T_2 are the times of longitudinal and transverse relaxation respectively), assuming that stagnation of the light fields of the competing modes has no effect on the spatial distribution of the inversion. The process of field interaction on the 3.39-micron line is of practical interest in connection with development of frequency standards of high stability, as well as other devices which utilize the sharp frequency dependences of laser power. Five figures, bibliography of twenty-two titles.

2/2

USSR

UDC: 519.282

POPOV, A. I.

"Methods of Approximate Representation of Distribution Laws for Random Quantities and Their Computer Realization"

V sb. Mat. metody v kibernet. tekhnike. Vyp. 6 (Mathematical Methods in Cybernetic Technology. No 6--collection of works), Kiev, 1970, pp 75-84 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V280)

Translation: Block diagrams are given of smoothing algorithms for statistical series using the Gram-Charlier series, Pearson curves, and Parsen's non-parametric density estimate. I. Kovalenko.

1/1

USSR

UDC 627.826/.828:624.042.7.001.57

KHESIN, G.L., POPOV, A.I., Candidates of Technical Sciences, DOLBIN, A.I., SHCHELKANOV, I.V., Engineers

"Investigation of Stresses in Buttress-Type Dams Due to the Action of a Seismic Load by the Photoelasticity Method"

Moscow, Gidrotekhnicheskoye Stroitel'stvo, No 3, 1972, pp 26-28

Abstract: The article deals with an approximate experimental method for the determination of stresses in hydraulic-engineering structures due to the action of seismic forces directed along the stream or across the stream. The research procedure is based upon the use of a centrifugal field for simulation of the seismic load and using the polarization-optical method for determination of the stresses in the dam models. 3 figures, 1 table, 6 bibliographic entries.

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USSR

UDC 591.18

POPOV, A. K., VOLKOV, A. M., ARUTYUNOV, S. K., and LOBUSOV, Ye. S., Institute of Biomedical Problems, Ministry of Public Health USSR, Moscow Aviation Institute imeni S. Ordzhonikidze, and Moscow Higher Engineering Technical School imeni N. E. Bauman

"Mechanisms of Spontaneous Rhythmic Activity of the Cerebral Cortex"

Moscow, Doklady Akademii Nauk SSSR, Vol 193, No 1, Jul/Aug 70, pp 245-247

Abstract: A discussion is presented of possible models in which stimulation of the cortex evokes depolarization of dendrites and excitation of internuncial neurons, which in turn show an inhibiting effect followed by hyperpolarization of dendrites. The process represents the beginning of rhythmic activity. It is assumed that the spontaneous rhythmicity of the isolated cortex is the result of bioelectrical sequential changes in the types of interactions between the dendrites and the internuncial neurons. In other words, the possibility of cortical rhythm exists because of the structural connections of the elements composing it. Thus, the systems and the subsystems interact. On the basis of analysis and the results of the modeling procedures, it is assumed that the spontaneous rhythmic activity of the nerve structures of the cortex is ensured

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202510018-0"

USSR

POPOV, A. K., et al, Doklady Akademii Nauk SSSR, Vol 193, No 1, Jul/Aug 70, pp 245-247

by a mechanism of strict sequential change in the types of interactions of the form

$$A \underset{+}{\overset{+}{\rightleftarrows}} B \rightarrow A \underset{+}{\overset{-}{\rightleftarrows}} B \rightarrow A \underset{-}{\overset{-}{\rightleftarrows}} B \rightarrow A \underset{-}{\overset{+}{\rightleftarrows}} B \text{ и т.д.}$$

where A and B are mutually interacting subsystems.

2/2

1/2 014 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--SPECTRAL LINE SPLITTING FOR OPTICAL TRANSITIONS IN GASES INDUCED BY RESONANT EXTERNAL FIELDS -U-

AUTHOR--POPOV, A.K.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58, NR 5, PP 1623-1625

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SPECTRAL LINE, LINE SPLITTING, LINE BROADENING, ATOM, ELECTRON ENERGY LEVEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/2298 STEP NO--UR/0056/70/058/005/1623/1625

CIRC ACCESSION NO--AP0127649

UNCLASSIFIED

2/2 014 UNCLASSIFIED

CIRC ACCESSION NO--AP0127649 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ANALYSES IS PRESENTED OF THE EFFECT OF INHOMOGENEOUS BROADENING ON SPECTRAL LINE SPLITTING INDUCED BY AN ADDITIONAL FIELD WHICH IS RESONANT WITH RESPECT TO THE ADJACENT TRANSITION. IT IS DEMONSTRATED THAT MANIFESTATION OF THE EFFECT STRONGLY DEPENDS ON THE RELATION BETWEEN THE FREQUENCIES AND DIRECTIONS OF PROPAGATION OF THE EMITTED AND AUXILIARY FIELDS. EVEN IN THE CASE OF STRONGLY INHOMOGENEOUS BROADENING AND UNDER CERTAIN OTHER CONDITIONS THE EFFECT MAY ARISE FOR INTERACTION ENERGIES BETWEEN THE ATOM AND AUXILIARY FIELD COMPARABLE WITH THE WIDTHS OF THE ENERGY LEVELS. FACILITY: INSTITUT FIZIKI POLYPROVODNIKOV SIBIRSKOGO OTDELENIYA AKADEMII NAUK SSSR.

UNCLASSIFIED

USSR

UDC 621.375.82

POPOV, A. K., BARANTSOV, V. I.

"On the Splitting of Energy Levels of Atoms Moving in a Standing Wave Field"

V sb. VII Ural'sk. konf. po spektroskopii, 1971, Vyp. 1 (VII Ural'sk Conference on Spectroscopy, 1971, No. 1 -- Collection of Works), Sverdlovsk, 1971, pp 148-159 (from RZh-Fizika, No 10, Oct 72, Abstract No 10D844)

Translation: The behavior of a three-level system in a field of two monochromatic fields of radiation was investigated theoretically. One was a standing wave field with a frequency close to the frequency of one of the transitions of the system, and the other one was a weak wave in resonance with the neighboring transition. The study was carried out in the first order of amplitude of the weak field and with an accuracy up to the fourth order in terms of the amplitude of the standing wave of the strong field. An expression was obtained for the absorption (emission) intensity at the frequency of the weak field under nonhomogeneous broadening of the spectral line. It is shown that interaction with the strong standing wave leads to an interference change in the shape of the line (without a change in its integral intensity), even if the energy of interaction between the system and the field is considerably less than the Doppler width. Kh. V.

1/1

POPOV, A.M.

JPRS 56,499
14 Jan 72

INVESTIGATION OF VOLATILE SUBSTANCES RELEASED BY POLYMER CONSTRUCTION MATERIALS

Article by V. D. Yablochkin, A. M. Popov, A. I. Gorshunova, V. A. Shchirskaya, Ye. V. Kolesnik and T. I. Chukhno; Moscow, Aktual'nyye Voprosy Kommunal'noy Gigiyeny i Meditsiny (Current Problems in Urban Hygiene and Medicine), Russian, 1971, pp 294-299

I. Block, Sheet and Granulated Plastics

During recent years there has been a considerable broadening of the field of applicability of plastics as construction materials (E.Behr, 1967). Thermoplastics on the basis of polycarbonates, polyamides and copolymers of the ABS type (Spencer, 1969) have shown the greatest possibilities of use in this direction. The content of volatile substances in polymers exerts a substantial effect on their physicomechanical properties and toxicity (G. S. Kvyatkovskaya, V. V. Lapshin, 1969; V. D. Yablochkin, 1969). Accordingly, the purpose of this study was an investigation of the combination of a complex of volatile substances released by some block, sheet and granulated plastics under conditions simulating the external medium in the process of using polymer construction materials.

Experimental Part

We studied a group of block, sheet and granulated construction materials, including 10 samples on the basis of phenol-formaldehyde resins, polycarbonate (diflon), polymethyl methacrylate and butadiene-styrene-acrylonitrile copolymer (ABS resin).

All the samples were investigated at normal (20-40° C) temperature and with an exposure of 10 days. In addition, most of the materials, other than pressed powder and material on the basis of ABS copolymer, was investigated at increased

POPOV, A. M.

STUDY OF VOLATILE SUBSTANCES RELEASED BY POLYMER CONSTRUCTION MATERIALS

[Article by V. D. Yablochkin, V. A. Shchirskaya, A. M. Popov, A. I. Gorshunova, Ye. V. Kolchina and ?. ?. Chukhno; Moscow, Aktual'nyye Voprosy Kosmicheskoy Biologii i Meditsiny (Current Problems in Space Biology and Medicine), Russian, 1971, pp 301-305]

III. Foam and Porous Plastics Based on Polystyrene and Polyurethane

Taking into account the peculiarities of practical use, one can expect polymer construction materials to be affected by different environmental factors, especially temperature. As experience demonstrates, the latter leads to the formation and release of great quantities of volatile substances (V. D. Yablochkin, 1969). The objective of this study was an investigation of a complex of volatile substances released by some foam and porous plastics under conditions simulating the parameters of the surrounding medium in the course of their use.

Experimental Part

In our study we selected a group of nine samples of foam and porous plastics on the basis of foam polystyrene and foam-porous polyurethane, including: foam plastics on the basis of emulsion and beaded polystyrenes PS-1, PS-4 and PS-B, hard foam plastics, polyurethane elastic incombustible porous plastic, porolon, backed with glass plastic by means of glue based on solutions of silicone rubbers, porolon and articles made from it (porolon matting).

The method for formulating and conducting the analytical investigation of the volatile substances released by polymer construction materials, including chemical, spectrophotometric and gas chromatographic analysis, did not differ from that described in communication I.

JPRS #56,499
14 JULY 72

USSR

UDC 621.385.832

ZHUKOVSKAYA, E. I., POPOV, A. N.

"Electron-Beam Tube With High Resolving Power"

Moscow, Tekhnika kino i televideniya, No. 6, 1971, pp 50-51

Abstract: This article is a description of the 18LK19L cathode-ray tube with high resolving power and screen brightness, which has recently gone into assembly-line production on a small scale. The tube may be used in scanning-beam systems. It has magnetic focusing and electric-field deflection, and a glass bulb with a flat screen 167 mm in diameter, the tube neck measuring 36 mm in diameter. The beam deflection angle is 40°. The maximum overall length of the tube is 560 mm. A photograph of the tube is given with its technical specifications and some characteristic curves. A novel feature is the small-structured screen of the "L" type with an yttrium silicate luminophore activated by cerium; it is highly stable under electron irradiation and is about twice as bright as the A-1 luminophore formerly used. The tube in general has high mechanical stability and is atmospherically and climatically durable.

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1/2 030 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--ON THE EXISTENCE OF THE SOLUTION OF THE STATIONARY PROBLEM FOR THE VISCOUS INCOMPRESSIBLE FLOW FROM THE HALF INFINITE CYLINDRICAL TUBE --U-

AUTHOR--POPOV, A.N.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK LENINGRADSKOGO UNIVERSITETA, NO 1, MATEMATIKA, MEKHANIKA, ASTRONOMIYA, 1970, NR 1, PP 60-75

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, MATHEMATICAL SCIENCES

TOPIC TAGS--VISCOUS FLOW, INCOMPRESSIBLE FLOW, NAVIER STOKES EQUATION, DIFFERENTIAL EQUATION SOLUTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0394 STEP NO--UR/0043/70/000/000/0060/0075

CIRC ACCESSION NO--AP0055179

UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0055179

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS ARTICLE PROVES THE EXISTENCE OF A GENERALIZED SOLUTION OF THE STATIONARY PROBLEM FOR NAVIE STOKES EQUATIONS (1) IN THE DOMAIN EXTERIOR TO A SURFACE S FOR E SUB2 AND E SUB3 WITH THE BOUNDARY CONDITIONS (2) OR (3), SATISFYING (10) OR (11) ACCORDINGLY. THE EXISTENCE OF THE SOLUTION HAS BEEN PROVED BY THE METHOD OF O. A. LADYZHENSKAIA (2) AND E. HOPF (3).

UNCLASSIFIED

USSR

UDC: 621.385.6

ZHARNENKOV, S. V., ZAKHAROV, V. P., POPOV, A. N., MARIN, V. P.

"A Magnetron Converter Which Changes Microwave Power to DC Power"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 17, Jun 72, Author's Certificate No 328805, Division H, filed 7 Jan 70, published 24 May 72, p 249

Translation: This Author's Certificate introduces: 1. A magnetron converter which changes microwave power to DC power. The device contains an electron source, and an interaction space which is closed in the azimuthal direction and houses a positive electrode. As a distinguishing feature of the patent, in order to improve the efficiency of microwave energy conversion, the source of electrons is closed with respect to the azimuth, and is located outside the interaction space coaxially with the central electrode. 2. A modification of the converter distinguished by the fact that the electron source is made in the form of a magnetron end gun of inverted design. 3. A modification of the converter described in point 1 distinguished by the fact that the electron source is made in the form of two magnetron end guns of inverted design.

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1/2 025 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--TRUE SPECIFIC HEAT AT LOW TEMPERATURES, ABSOLUTE ENTROPY AND ENTHALPY UNDER STANDARD CONDITIONS OF KBO SUB2 -U-

AUTHOR-(03)-PAUKOV, I.YE., KHRIPLOVICH, L.M., POPOV, A.P.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 547

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--SPECIFIC HEAT, ENTROPY, ENTHALPY, LOW TEMPERATURE PROPERTY, CALORIMETRY, POTASSIUM COMPOUND, BORATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1419 STEP NO--UR/0076/70/044/002/0547/0547

CIRC ACCESSION NO--AP0135093

UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0135093

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TEST SPECIMENS WERE PREPD. FROM PURE K SUB2 CO SUB3 AND H SUB3 BO SUB3 AND DEHYDRATED AT 550DEGREES. THE SP. HEAT C SUBP WAS MEASURED IN A VACUUM ADIABATIC CALORIMETER AT 12.11-312.22DEGREESK. THE C SUBP VALUES INCREASED WITH TEMP. FROM 0.106 CAL PER MOLE DEGREE AT 12.11DEGREESK TO 16.39 CAL PER MOLE DEGREE AT 312.22DEGREESK. BELOW 18DEGREESK, C SUBP FOLLOWS THE ALPHATAU PRIME3 LAW. THE C SUBP (TAU) CURVES WAS EXTRAPOLATED TO ODEGREESK (S SUB12 EQUALS 0.0339 ENTROPY UNIT; H SUB12 MINUS H SUBO EQUALS 0.303 CAL PER MOLE). UNDER STANDARD CONDITIONS SDEGREES SUB298 TIMES 15 EQUALS 19.12 ENTROPY UNIT AND ETADEGREES SUB298 TIMES 15 MINUS H SUBO DEGREES EQUALS 2895 CAL PER MOLE.

UNCLASSIFIED

1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--ROLE OF THE HYPOPHYSIS IN THE STIMULATION OF ANABOLIC PROCESSES IN NORMAL RATS AND IN THE ANIMALS TREATED WITH METHYLTHIOURACIL -U-

AUTHOR-(02)-RABKINA, A.YE., POPOV, A.P.

COUNTRY OF INFO--USSR

SOURCE--PROBL. ENDOKRINOL. 1970, 16(2), 73-8

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PITUITARY GLAND, METABOLISH, BODY WEIGHT, HORMONE, ORGANIC SULFUR COMPOUND, URACIL, THYROID GLAND, REPRODUCTIVE SYSTEM, SOMATOTROPHIC HORMONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0294

STEP NO--UR/0502/70/016/002/0073/0078

CIRC ACCESSION NO--AP0120983

UNCLASSIFIED

2/2 027 UNCLASSIFIED

CIRC ACCESSION NO--AP0120983 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NEROBOLYL (NORANDROSTENOLONE) ADMINISTERED AT 1 MU G-100 G DAILY FOR 1 AND 2 WEEKS INCREASED THE BODY WT. OF INTACT RATS AND OF THOSE WITH METHYLTHIOURACIL BLOCKED THYROID GLANDS. NEROBOLYL DECREASED THE NO. OF ACIDOPHILIC CELLS IN THE HYPOPHYSIS OF ATHYROID RATS, INCREASED THE AMT. OF INTACT RATS, AND DECREASED THE NO. OF BASOPHILIC CELLS IN BOTH GROUPS. NEROBOLYL SOMEWHAT INCREASED THE WT. OF THE HYPOPHYSIS, SEMINAL VESICLES, AND PROSTATE, AND DECREASED THE WT. OF THE THYMUS. AN INCREASED AMT. OF STH (SOMATOTROPHIN) PRODUCING ACIDOPHILS DEVELOPING UNDER THE REACTION OF NEROBOLYL SUGGESTS THAT ENDOGENOUS STH PARTICIPATES IN THE MECHANISM OF ANABOLIC STEROID ACTION. FACILITY: LAB. EKSP. MORFOL., INST. EKSP. ENDOKRINOL. KHIM. GORMON., MOSCOW, USSR.

UNCLASSIFIED

Transformation and Structure

USSR

UDC 669.27.017

(3)

VEDERNIKOVA, V. A., MIL'MAN, Yu. V., POSTNOV, L. M., POPOV, A. P., SLENZAK, G. YE., TREFILOV, V. I., and SHUMILOV, I. M., Institute of Metal Physics, Academy of Sciences, Ukr SSR

"Structural Changes During Annealing of a Precipitation Hardened Tungsten Alloy"

Kiev, Metallofizika, No 40, 1972, pp 45-49

Abstract: Translucent electron microscopy, metallography, and diffraction line width measurements were used to study the structural changes resulting from the annealing of deformed tungsten in which 0.2% ZrC had been added during melting. At up to 1800°C a dispersed cellular structure is preserved in the alloy along with a structure stabilized by precipitations of a second phase. These were identified as ZrC in an x-ray investigation of the deposit obtained during electrochemical dissolving of the tungsten. In isolated sections of the alloy, with an increased density of second-phase particles, the cellular structure was preserved even after annealing at 2340°C. Increased recrystallization temperature is accompanied by increased heat resistance. 4 figures, 9 bibliographic references.

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USSR

UDC: 621.791.053:669-153:539.319

FREYDLINA, YE. YU., POPOV, A. S., and ANTONOV, YE. G. (Engineers)

"Effect of Annealing on the Residual Stresses and Mechanical Properties of Welded Joints of MA2-1 and VMD-3 Magnesium Alloys"

Moscow, Svarochnoye proizvodstvo, No 12, Dec 71, pp 33-34

Abstract: The fabrication of welded structures from magnesium alloys involves relieving of residual welding stresses inasmuch as formable alloys of the Mg-Al system tend to stress corrosion. To reduce the tendency to cracking, such structures are subject to annealing. This study concerns the effect of both temperature and annealing time on the values of residual stresses and mechanical properties of welds of MA2-1 and VMD-3 alloys. Use was made of reference holes to measure the residual stresses prior to and after annealing. The annealing temperatures and durations were 250 and 350°C for 0.5 to 20 hrs. The stress measurement results indicate that annealing at 250°C for 0.5 to 1 hr reduces residual stresses to about one half and for more than 2 hrs -- to about one tenth. Annealing at 350°C for 1 hr

USSR
FREYDLINA, YE. YU., et al, Svarochnoye proizvodstvo, No 12, Dec 71, pp 33-34

makes possible almost complete relaxation of stresses. The mechanical properties of the tested alloys both before and after annealing are cited, indicating that annealing MA2-1 alloy at 350°C up to 20 hrs leaves its properties unaffected except for the angle of bend and notch toughness. Annealing VMD-3 alloy at 250°C for 6 hrs failed to affect its mechanical properties; annealing at 350°C, for longer durations, the properties of the parent material begin to deteriorate and its plasticity increases; the strength properties of the welds are somewhat improved. (3 illustrations, 1 table).

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USSR

UDC 621.791.019

ANTONOV, Ye. G., POPOV, A. S., YAKUSHIN, B. F., OSOKINA, T. N., MIKHEYEV, I. M., SMIRNOVA, Ye. I., SHPAGIN, B. V., and NIKOLAYEVA, V. S., Moscow

"Metallurgical Action on Seam Strength in Magnesium Alloy Welding"

Kiev, Avtomaticheskaya Svarka, No 2, Feb 71, pp 53-55

Abstract: The problem considered in this paper is the metallurgical means that can be used to deal with cracks in magnesium alloy welds, specifically magnesium alloyed with zinc, and the efficiency of the means. Melts of the VMD3 series and several magnesium-zinc melts were the subjects of the experimentation; the defect of the first class of alloys is the tendency of its welds to develop heat cracks caused by the change in the lanthanum content. It was assumed in these tests that the introduction of rare earth metals into the alloys would improve their resistance to the formation of cracks since magnesium forms eutectics with these metals. A conclusion reached by the authors is that one cause of cracks forming in the welds that did not contain zirconium is the large crystalline structure of the weld metal, and that the resistance of the weld to cracks could be improved by the addition of 0.55% Zr.

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USSR

UDC 621.791.011.001.5:669.721 + 669.5

ANTONOV, YE. G., Engineer, POPOV, A. S., Engineer, YAKUSHIN, B. F., Candidate of Technical Sciences, USOKINA, T. N., Engineer, NIKOLAYEVA, V. S., Technician, MIKHEYEV, I. M., Engineer, SMIRNOVA, YE. I., Engineer, SHPAGIN, B. V., Engineer, and BABADZHANOVA, I. S., Engineer

"Effect of Rare-earth Elements on the Weldability of Magnesium-Zinc and Magnesium-Zinc-Zirconium Alloys"

Moscow, Svarochnoye Proizvodstvo, No 12, Dec 70, pp 6-8

Abstract: The effect of some rare-earth metals on the weldability of magnesium-zinc and magnesium-zinc-zirconium alloys was studied in experimental melts. Sheets of the alloys, 2 mm thick, were obtained by rolling on a "Duo" laboratory mill from flat ingots cast in metal molds. Before rolling, the ingots were heated to 380-400° C (11 intermediate heats, 2-3 passes). Shrinkage was 15-25 percent. After rolling, the sheets were annealed at 260° C for an hour. The filler wire was made of the same material. The results indicate that rare-earth metals (neodymium,

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ANTONOV, YE. G., et al., Svarochnoye Proizvodstvo, No 12, Dec 70, pp 6-8

lanthanum, mischmetal) at the rate of up to 0.6 percent by weight affect the hot-shortness of the studied alloys in different ways during welding. The most probable reason for this is the varying effect of rare-earth metals on the plasticity of the studied alloys in the region of the lower limit of the brittle temperature range, as well as the varying effect on the magnitude of the latter. The weld cracking resistance of the alloys can be increased by alloy additions of lanthanum and cerium mischmetal and the use of filler wire (2 percent Zn, 0.45 percent Zr, 3.44 percent cerium mischmetal, the rest Mg).

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USSR

UDC 576.3:578

POPOV, A. S., Laboratory of Immunogenetics, Institute of Transplantation of Organs and Tissues, Academy of Medical Sciences USSR, Moscow

"Device for Measuring the Height of Individual Cells in Monolayer Cultures and Smears"

Leningrad, Tsitologiya, Vol 13, No 12, Dec 71, pp 1,537-1,540

Abstract: An attachment for a microscope was designed with which the height of individual cells can be measured in tissue cultures, smears, and other monolayer preparations. A thread-like preparation is stretched under the objective of the microscope. The cells are first measured and photographed face on, whereupon the thread is rotated over 90° around its horizontal axis by means of an arc-shaped handle forming a part of the attachment, and measurement and/or photography of the cells is carried out from their side. For measurements conducted on cells of an SCH-E monolayer culture, the threads were prepared as follows. After the monolayer culture had been grown on sterilized 35-40 X 5-7 mm strips of "white" X-ray film stripped of emulsion, the culture was treated with Boivin liquid and stained with alum hematoxylin. Upon drying, the film strips with culture were coated with paraffin wax and strips 30-50 microns thick were cut from them. During the cutting the strips curled up

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POPOV, A. S., Tsitologiya, Vol 13, No 12, Dec 71, pp 1,537-1,540

and the paraffin layer separated from them readily. The cells had a mean height of 3.8 microns in the interphase and a volume of the nucleus equal to 400±13 cubic microns. V. A. Benyush has proposed a similar procedure, but the device described by him is suitable only for a Zeiss microscope of a definite type, whereas the attachment designed in this instance can be used with the MBR-1 microscope that is more common in the USSR.

USSR

UDC 621.791:621.642.001.2

(5)

BOGOMOLOVA, A. S., Candidate of Technical Sciences, and BAKSHI, O. A., Doctor of Technical Sciences, Chelyabinsk Polytechnic Institute; SEDYKH, V. S., Doctor of Technical Sciences, and TRYKOV, YU. P. and BELOUSOV, V. P., Candidates of Technical Sciences, Volgograd Polytechnic Institute; BORISOVA, V. A., KARAN, A. B., POPOV, A. S., and SAPRYGIN, V. D., Engineers, Moscow

"Practical Design of Welded Vessels and Pipe From Dissimilar Materials"

Moscow, Svarochnoye Proizvodstvo, No 9, 1973, pp 3-6

Abstract: Welding tests were conducted for welding dissimilar materials to join dissimilar metals in the fabrication of vessels and pipe. A steel+copper+niobium+titanium joint was made from steel Kh18N10T, M1 copper, niobium, and OT4 titanium, and a magnesium alloy+titanium+aluminum+aluminum alloy joint was made from magnesium alloy MA2-1, VT1 titanium, AD1 aluminum, and aluminum alloy AMg6. The goal of this work was to determine the proper materials which would yield a reliable diffusion barrier in the intermediate weld layers, and a joint with a strength equal to that of the base metal. Mathematical formulas are given for calculating the tensile and yield strengths of the soft sublayer and critical magnitude of relative thickness of the soft sublayer for which an equal-strength joint can be achieved. For the titanium-steel joint the

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